Vol. 1001 Number 3

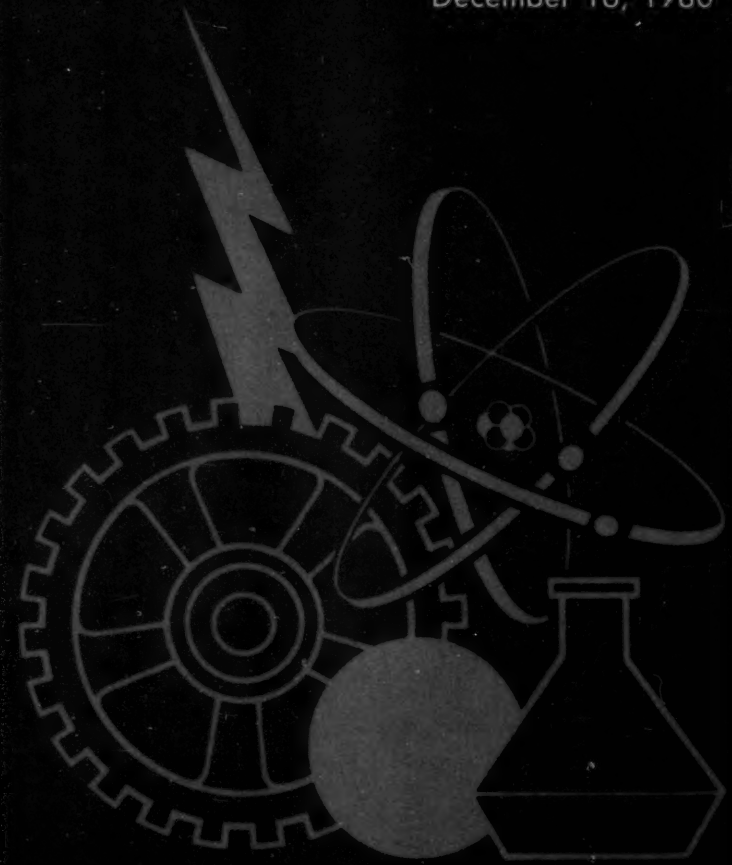
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

December 16, 1980



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

December 16, 1980 Volume 1001 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

June 17, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

DEPARTMENT OF COMMERCE

Office of Patent and Trademark

37 CFR Part 1

IMPLEMENTATION OF THE PATENT COOPERATION TREATY; RULE PROMULGATION

Correction

In FR Doc. 78-12832 appearing at page 20458 in the issue of Thursday, May 11, 1978, on page 20464. third column, the last sentence of paragraph (f) of § 1.84 should read as follows:

"Reference signs not mentioned in the description shall not appear in the drawing, and vice versa."

BILLING CODE 1505-01-M

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

Re. 27,654, Re. S.N. 166,971, Filed Jul. 8, 1980, Cl. 144/229, CUTTERHEAD STRUCTURE, Frederic F. Chapman, et al., Owner of Record: *Hawker Siddeley Canada, Ltd., Vancouver, British Columbia, Canada,* Attorney or Agent: John B. Young, et al., Ex. Gp.: 324

3,195,868, Re. S.N. 190,011, Filed Oct. 1, 1980, Cl. 366/85, CONTINUOUS MIXER, Bernard A. Loomans, et al., Owner of Record: *Beker Perkins Inc., New York, N.Y.,* Attorney or Agent: John F. Learman, et al., Ex. Gp.: 242

3,554,618, Re. S.N. 192,172, Filed Sep. 29, 1980, Cl. 308/2, RAILROAD TRUCKS, James A. Ditzler, et al., Owner of Record: *The Polymer Corporation, Reading, Pa.,* Attorney or Agent: Richard O. Church, Ex. Gp.: 243

3,859,437, Re. S.N. 117,239, Filed Jan. 31, 1980, Cl. 424/238, REDUCING CHOLESTEROL LEVELS, Alan Hugh Weigand, Owner of Record: *Intellectual Property Development Corporation, New Rochelle, N.Y.,* Attorney or Agent: William H. Saltzman, Ex. Gp.: 125

3,887,557, Re. S.N. 190,054, Filed Sep. 23, 1980, Cl. 544/279, PIPERAZINE DERIVATIVES AND PROCESSES FOR PREPARATION THEREOF, Shinsaku Minami, et al., Owner of Record: *Dainippon Pharmaceutical Company, Ltd., Osaka, Japan,* Attorney or Agent: Leonard W. Sherman, et al., Ex. Gp.: 122

4,114,495, Re. S.N. 188,006, Filed Sep. 17, 1980, Cl. 84/101, CHANNEL PROCESSOR, Norio Tomisawa, Owner of Record: *Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan,* Attorney or Agent: Robert Spensley, et al., Ex. Gp.: 217

4,115,319, Re. S.N. 187,734, Filed Sep. 16, 1980, Cl. 252/429 B, CATALYSTS AND CATALYST COMPONENTS FOR POLYMERIZING OLEFINS, Umberto Scata, et al., Owner of Record: *Montedison S.p.A., Milan, Italy,* Attorney or Agent: Patricia O. Peake, Ex. Gp.: 117

4,117,285, Re. S.N. 187,996, Filed Sep. 17, 1980, Cl. 200/76, SNAP ACTION CIRCUIT BREAKER, George S. Harper, Owner of Record: *Airpax Electronics Incorporated, Cambridge, Md.,* Attorney or Agent: James E. Nolan, et al., Ex. Gp.: 243

4,130,421, Re. S.N. 189,379, Filed Sep. 22, 1980, Cl. 75/154, FREE MACHINING Cu-Ni-Sn ALLOYS, John Travis Plewes, et al., Owner of Record: *Bell Telephone Laboratories, Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 111

4,164,201, Re. S.N. 192,197, Filed Sep. 30, 1980, Cl. 119/81, GROUND-SUPPORTED POULTRY DRINKING FOUNTAIN, Robert A. Vanderhye, Owner of Record: *Interfarm Corporation, McLean, Va.,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 333

4,189,699, Re. S.N. 188,010, Filed Sep. 17, 1980, Cl. 335/229, LIMITED-ROTATION MOTOR WITH INTEGRAL DISPLACEMENT TRANSDUCER, Edward F. Burke, Jr., Owner of Record: *MFE Corporation, Salem, N.H.,* Attorney or Agent: Robert A. Cesari, et al., Ex. Gp.: 212

4,209,714, Re. S.N. 178,457, Filed Aug. 15, 1980, Cl. 307/229, LOGARITHMIC AMPLIFIER, Yukihiko Miyamoto, Owner of Record: *Trio Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Richard L. Aitken, Ex. Gp.: 254

PATENT NOTICES

Certificates of Correction for the Week of Dec. 16, 1980

Re. 29,997	4,166,036	4,211,730	4,221,007
Re. 30,259	4,170,423	4,211,853	4,221,048
Re. 30,334	4,176,209	4,212,859	4,221,198
Re. 30,377	4,183,551	4,213,248	4,221,578
D. 257,131	4,183,890	4,213,778	4,221,071
3,970,620	4,185,992	4,214,054	4,222,341
4,008,261	4,192,635	4,215,202	4,222,385
4,011,209	4,194,529	4,215,250	4,222,497
4,032,530	4,195,324	4,215,574	4,222,533
4,038,920	4,198,128	4,215,951	4,222,732
4,106,412	4,198,269	4,216,178	4,222,748
4,110,028	4,200,574	4,216,364	4,223,054
4,118,809	4,203,972	4,216,570	4,223,204
4,126,914	4,205,230	4,216,881	4,223,248
4,134,859	4,205,575	4,216,954	4,223,631
4,135,329	4,207,225	4,217,370	4,223,838
4,138,428	4,207,392	4,218,407	4,223,869
4,138,825	4,209,943	4,219,517	4,225,110
4,142,922	4,210,105	4,219,908	4,225,264
4,143,145	4,211,073	4,219,911	4,225,679
4,144,371	4,211,279	4,220,709	4,225,891
4,155,750	4,211,519	4,220,919	4,226,930
			4,230,976

Dedication

3,571,862.—*Albert W. Zemek*, Binghamton, N.Y. BELTED AXIAL LEAD ELECTRONIC COMPONENT SPLICING CLIP. Patent dated Mar. 23, 1971. Dedication filed Aug. 21, 1980, by the assignee, *Universal Instruments Corporation.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimer and Dedication

4,011,731.—*Gershon Meckler*, Atlanta, Ga. AIR CONDITIONING APPARATUS UTILIZING SOLAR ENERGY AND METHOD. Patent dated Mar. 15, 1977. Disclaimer and Dedication filed Sept. 12, 1980, by the assignee, *Gershon Meckler Associates, P.C.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Errata

All reference to Patent No. 4,226,709 to Jakhin Boas Popper of Israel, "Vibrating Surface Apparatus" appearing in the OFFICIAL GAZETTE of Oct. 7, 1980 should be deleted since no patent was granted.

The drawing in Patent No. 4,220,709, Richard A. de Mauriac of New York for "Heat Developable Imaging Materials and Process" appearing in the OFFICIAL GAZETTE of Sept. 2, 1980 appeared in error. No drawing should have appeared for this patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licenses upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 6–147,417. Dynamic Binary Fourier Filtered Imaging System. Filed May 6, 1980.

Patent application 6–149,793. Stable Ultraviolet Bandpass Chemical Filter. Filed May 14, 1980.

Patent application 6–150,522. Lens System Having Wide Angle Objectives. Filed May 16, 1980.

Patent 4,032,441. Method for Reclaiming Used Hydraulic Fluid. Filed June 30, 1976. Patented June 28, 1977. Not available NTIS.

Patent 4,205,428. Planar Liquid Crystal Matrix Array Chip. Filed Feb. 23, 1978. Patented June 3, 1980. Not available NTIS.

Patent 4,207,495. Means for Improving the Collector Efficiency of an Emitting Sole Crossed Field Amplifier. Filed Aug. 30, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,542. Multiple Shock Aerodynamic Window. Filed Apr. 20, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,547. Reflection Mode Notch Filter. Filed Nov. 1, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,889. Injection System for Suspension and Solutions. Filed Oct. 27, 1978. Patented June 17, 1980. Not available NTIS.

Patent 4,208,129. Sensitive Laser Spectroscopy Measurement System. Filed June 30, 1978. Patented June 17, 1980. Not available NTIS.

Patent 4,208,729. Automatic Data Restore Apparatus for MNOS Temporary Store Memory. Filed Mar. 8, 1979. Patented June 17, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6–037,603. Hydrogen Isotope Separation. Filed May 10, 1979.

Patent application 6–050,407. Selective Screening Methods for Selecting and Identifying Hyper-Cellulolytic Microbial Mutants; Hyper-Cellulolytic Mutant Microorganisms; and Processes for Their Utilization. Filed June 20, 1979.

Patent application 6–061,152. One-Directional Uniformly Coated Fibers, Method of Preparation, and Uses Therefor. Filed July 26, 1979.

Patent 4,166,990. Core/Coil Assembly for Use in Superconducting Magnets and Method for Assembling the Same. Filed Aug. 12, 1977. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,173,660. Method of Preparing a Thermoluminescent Phosphor. Filed July 13, 1978. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,181,538. Method for Making Defect-Free Zone by Laser-Annealing of Doped Silicon. Filed Sept. 26, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,190,637. Graphite Having Improved Thermal Stress Resistance and Method of Preparation. Filed July 18, 1978. Patented Feb. 26, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, VA 22217

Patent application 6–126,560. Transducer Array Crossover Network. Filed Mar. 3, 1980.

Patent application 6–137,066. Multiwavelength Self-Pumped Solid State Laser. Filed Apr. 3, 1980.

Patent application 6–138,773. Small Hydrophone That is Directional at Low Frequencies. Filed Apr. 10, 1980.

Patent application 6–140,352. Multi-Color Tunable Filter. Filed Apr. 14, 1980.

Patent application 6–143,257. Electrical Waveform Synthesizer. Filed Apr. 24, 1980.

Patent application 6–143,398. Method and Apparatus for Obtaining Enhanced NMR Signals. Filed Apr. 24, 1980.

Patent application 6–147,413. Switching Quadrature Detector. Filed May 6, 1980.

Patent application 6–147,992. Low-Barrier-Height Epitaxial GaGnAs Mixer Diode. Filed May 8, 1980.

Patent application 6–150,383. Pivotal Support With Independent Adjusting Elements and Locking Means. Filed May 27, 1980.

Patent application 6–152,456. Seafloor Attachment Bolts. Filed May 22, 1980.

Patent application 6–153,123. Combination Exhaust and Relief/Venting Valve. Filed May 27, 1980.

Patent application 6–153,987. Magnetoplasmadynamic Switch. Filed May 28, 1980.

Patent application 6–157,126. Phase-Slipped Time Delay and Integration Scanning System. Filed June 6, 1980.

Patent application 6–157,750. Burst on Target Simulator Device for Training With Rockets. Filed June 9, 1980.

Patent application 6–160,034. Heterojunction and Schottky Barrier EBS Targets. Filed June 16, 1980.

Patent application 6–160,050. Melting Method for High-Homogeneity Precise-Composition Nickel-Titanium Alloys. Filed June 16, 1980.

Patent application 6–160,697. Dead-Faced Electrical Connector With Electromagnetic Vulnerability Protection. Filed June 18, 1980.

Patent application 6–161,183. Integral-Shadow-Grid-Controlled Porosity Dispenser Cathode. Filed June 19, 1980.

Patent application 6–162,347. Luminescent Hafnia Composition. Filed June 23, 1980.

Patent 4,178,404. Immersed Reticle. Filed Feb. 6, 1978. Patented Dec. 11, 1979. Not available NTIS.

Patent 4,186,190. Method of Treating Burns Using a Poly-epsilon-Caprolactone. Filed Nov. 13, 1978. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,190,327. Deformable Liquid Mirror. Filed Oct. 16, 1978. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,195,962. Platform Loading System. Filed Jan. 29, 1976. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,197,517. High Speed Frequency Tunable Microwave Filter. Filed Nov. 3, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,197,543. Display Processor for Aircraft Landing System. Filed Feb. 13, 1979. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,198,632. Transponder Reply Limiting by Means of Recognition of Fixed Interrogation Periods. Filed June 10, 1971. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,200,873. Folded Tapered Coaxial Cavity-Backed Annular Slot Antenna. Filed Sept. 5, 1978. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,200,919. Apparatus for Expanding the Memory of a Mini-Computer System. Filed Dec. 5, 1978. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,201,618. Apparatus for Curing Adhesively Joined Fiber Optic Elements. Filed July 21, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,201,955. Method of Producing Population Inversion and Lasing at Short Wavelengths by Charge Transfer. Filed Mar. 22, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,201,987. Method for Determining Antenna Near-Fields From Measurements on a Spherical Surface. Filed Mar. 3, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,203,165. Acoustic Filter. Filed Oct. 24, 1956. Patented May 13, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 6–153,240. JFET Oscillator. Filed May 27, 1980.

Patent application 6–153,246. An Implantable Electrical Device. Filed May 27, 1980.

Patent 4,204,037. Method and Automated Apparatus for Detecting Coliform Organisms. Filed Apr. 4, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,204,402. Reduction of Nitric Oxide Emissions From a Combustor. Filed Sept. 8, 1977. Patented May 27, 1980. Not available NTIS.

Patent 4,204,544. Simultaneous Muscle Force and Displacement Transducer. Filed Sept. 30, 1977. Patented May 27, 1980. Not available NTIS.

Patent 4,205,229. Cooled Echelle Grating Spectrometer. Filed Oct. 31, 1978. Patented May 27, 1980. Not available NTIS.

Patent 4,206,383. Miniature Cyclotron Resonance Ion Source Using Small Permanent Magnet. Filed Sept. 11, 1978. Patented June 3, 1980. Not available NTIS.

Patent 4,207,024. Composite Seal for Turbomachinery. Filed Aug. 4, 1978. Patented June 10, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
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Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448–1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 6, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-25-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-7-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials: Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-27-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	4-16-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-13-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-78
DESIGNS, GROUP 290—Vacant Industrial Arts: Household, Personal and Fine Arts.	10-10-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-4-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	4-24-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during September 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents—Numbers 3,102,270 to 3,105,236, inclusive
Plant Patents—Numbers 2,277 to 2,286, inclusive

REISSUES

DECEMBER 16, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,445

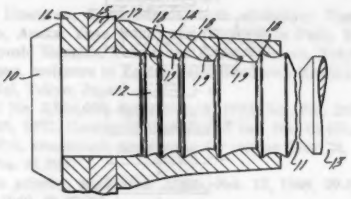
FASTENER WITH PROPORTIONED STRENGTH LOCK GROOVES

John H. Ruhl, Tustin, Calif., assignor to Huck Manufacturing Company, Detroit, Mich.

Original No. 3,915,053, dated Oct. 28, 1975, Ser. No. 500,583, Aug. 26, 1974. Application for reissue Aug. 17, 1978, Ser. No. 934,880

Int. Cl.[2] F16B *19/05*

U.S. Cl. 85—7 9 Claims



1. A fastener having a head and a shank portion, and a swage collar member *adapted to be* fastened thereon for holding workpieces,

said fastener having *a plurality of* at least three *each of* differently proportioned strength locking annular shoulder and groove means *alternatingly arranged along the shank portion* for providing a predetermined desired load distribution across the shank portion which *load distribution* is generally coextensive with the collar to the sheet line of the [workpiece] *workpieces*, said plurality of locking shoulder *means* and groove means being non-uniform in dimensions and wherein, *said collar when swaged onto said shank substantially fills said at least three groove means,*

each of said groove means increases in size *in both axial and radial dimensions* as distance from the sheet line increases *with the resultant shear areas of said groove means increasing substantially in size from the sheet line* and,

each of said shoulder means increase substantially in size in an axial direction as distance from the sheet line increases whereby the resultant shear areas of said shoulder means similarly substantially increase, and

said shoulder *means* and groove means provide proportioned stiffness such that the *said* shoulder *means* and groove means fail at approximately the same load to thereby provide the maximum strength for the fastener and being operative to prevent shear stress from being taken up at only a shoulder which is closely adjacent to the sheet line.

Re. 30,446

APPARATUS FOR DETECTING TEMPERATURE VARIATIONS OVER SELECTED REGIONS OF LIVING TISSUE, AND METHOD THEREOF

Phillip H. Meyers, New Orleans, La., and Franklin M. Greene, Flushing, N.Y., assignors to E-Z-Em Company, Inc., Westbury, N.Y.

Original No. 4,135,497, dated Jan. 23, 1979, Ser. No. 779,264, Mar. 18, 1977. Application for reissue Mar. 16, 1979, Ser. No. 21,112

Int. Cl.[3] A61B *10/00*

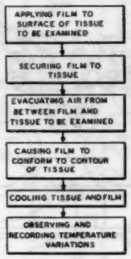
U.S. Cl. 128—736 16 Claims

1. A method of detecting temperature variations over selected regions of the breasts of a woman within a predetermined range of temperatures, and which method utilizes [liquid crystals enclosed between] *an* elastic flexible [sheets which represent a composite] film, *having temperature responsive liquid crystals*, and which crystals are responsive to changes in skin temperatures of said breasts to display a color pattern on said film representative of said temperature variations, said method comprising:

(a) wrapping said film around the breasts to be examined,

(b) securing said film in position around said breasts;

(c) positioning a first end of a tubular member and a spacer adjacent said first end in a region spaced from the edges of said film and between said breasts, said spacer providing


APPLYING FILM TO SURFACE OF TISSUE TO BE EXAMINED
SECURING FILM TO TISSUE
EVACUATING AIR FROM BETWEEN FILM AND TISSUE TO BE EXAMINED
CAUSING FILM TO CONFORM TO CONTOUR OF TISSUE
COOLING TISSUE AND FILM
OBSERVING AND RECORDING TEMPERATURE VARIATIONS

communication between said first end of said tubular member and the region under said film;

(d) connecting the opposite end of said tubular member to a vacuum source;

(e) evacuating air from between said film and said breasts;

(f) causing said film to stretch and conform to the contour of said breasts without materially deforming said breasts; and

(g) observing the color pattern produced on said film representative of the temperature variations over said breasts.

Re. 30,447

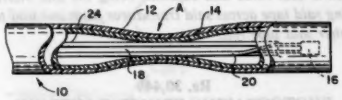
INSULATING CONNECTOR

Patrick V. Loyd, Woodbine, and Samuel M. Mills, University Park, both of Md., assignors to J. L. Clark Manufacturing Co., Rockford, Ill.

Original No. 3,814,139, dated Jun. 4, 1974, Ser. No. 282,977, Aug. 23, 1972. Application for reissue Feb. 23, 1979, Ser. No. 14,494

Int. Cl.[3] F16L *9/12*

U.S. Cl. 138—141 8 Claims



1. An electrical connector comprising a laminated tubular member, said tubular member having a squeezable spirally wound heat-shrinkable dielectric outer layer, and a relatively soft innermost layer bonded directly to said outer layer, said innermost layer consisting essentially of a synthetic polymeric pressure-sensitive adhesive at ambient temperatures and having a flow temperature lower than the temperature required to heat shrink said outer layer whereby opposed portions of said innermost layer may be adhesively secured to each other and to a conductor disposed therein by squeezing the connector prior to heat shrinking said outer layer.

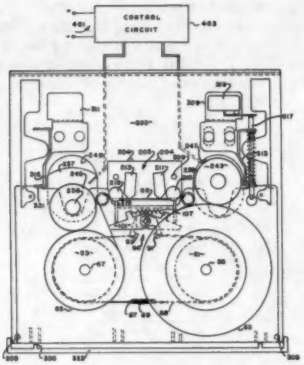
Re. 30,448
TAPE RECORDER SYSTEM

Bansi K. Shroff, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Original No. 4,095,758, dated Jun. 20, 1978, Ser. No. 635,941, Nov. 28, 1975. Application for reissue Jan. 15, 1979, Ser. No. 3,621

Int. Cl.[3] **G11B** *15/32, 15/46, 15/60, 23/10*

U.S. Cl. 242—192 **19 Claims**



19. A tape transport comprising a pair of coplanar hubs rotatable about fixed axes and a length of pliable tape carried in rolls on said hubs; a transducer cooperative with a span of tape intermediate said rolls; and drive means for driving said tape across said transducer from one said tape roll to the other said tape roll, for maintaining substantially constant tension in said entire length of tape in all modes of operation of said system and for producing hard-packed, highly reproducible and stable tape rolls, said drive means comprising a first capstan movable into engagement with the periphery of the first of said tape rolls, a second capstan movable into engagement with the periphery of the second of said tape rolls, means including a variable speed motor drivingly connected to said first capstan and to said second capstan, a first carriage, said first capstan being mounted on said first carriage, and a second carriage and said second capstan being mounted on said second carriage, biasing means for biasing said capstans into driving engagement with the peripheries of said tape rolls, said biasing means including spring means through which said carriages are connected to each other, whereby said biasing means equalize the forces exerted by the capstans on the tape rolls regardless of the relative sizes of tape rolls, and control circuit means connected to said motor for controlling the speed of said motor, thereby generating a desired speed and tension in said span of tape intermediate said rolls, said capstans being the sole motive force for driving said tape across said transducer from one said tape roll to the other said tape roll.

Re. 30,449
PHOTOGRAPHIC PRINTING METHOD

Robert F. DiNatale, Old Mill Rd., Sutton, Mass. 01527

Original No. 4,087,180, dated May 2, 1978, Ser. No. 763,326, Jan. 28, 1977. Application for reissue Jul. 10, 1978, Ser. No. 923,068

Int. Cl.[2] **G03B** *27/32, 27/52*

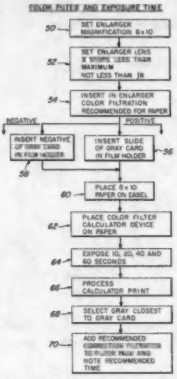
U.S. Cl. 355—77 **26 Claims**

35. A method of photographic printing comprising:

making at least one exposure through a color filter calculator device of a simulation of a properly exposed neutral gray card for a film to be printed having particular D/log E characteristics, and a film-mask-colored element for film having a colored mask, for at least one predetermined period of time on at least one sheet of photographic paper having certain D/log E characteristics;

processing each sheet of paper;

comparing each such exposure of said simulation of a properly exposed gray card to a gray card reference to determine the proper exposure time and the color filtration to be used to print all films having D/log E characteristics generally similar to said particular D/log E characteristics on paper having D/log E characteristics generally similar to said certain D/log E characteristics;



adding necessary color filtration in the exposing light; measuring the intensity of the exposing light at the printing plane;

exposing an additional sheet of paper, having D/log E characteristics generally similar to said certain D/log E characteristics, to an image on a film, having D/log E characteristics generally similar to said particular D/log E characteristics, with light at said measured intensity through the color filtration required to faithfully reproduce the simulation of a properly exposed gray card for said proper exposure time, and processing said additional sheet of paper to obtain a print of the image on the film.

Re. 30,450
SURFACE MODIFIED PIGMENTS

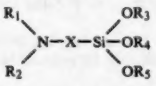
Joseph Iannicelli, Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Original No. 3,290,165, dated Dec. 6, 1966, Ser. No. 269,695, Apr. 1, 1963. Continuation-in-part of Ser. No. 189,321, Apr. 23, 1962, abandoned. Application for reissue Apr. 2, 1979, Ser. No. 26,380

Int. Cl.[3] **C09C** *3/12*

U.S. Cl. 106—308 N **8 Claims**

1. A *filler comprising a* finely divided particulate inorganic pigment surface *selected from the group consisting of synthetic silicas, silicates, metal oxides, calcium carbonates, zinc sulfides, and carbon blacks, said pigment surface having been* modified *by treatment* with from about 1% to 15%, based on the weight of the dry pigment, of an amino organosilane of the formula



wherein R_1 is selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, and alkylaryl, R_2 is selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl and alkylaryl, R_3 is selected from the group consisting of hydrogen, lower alkyl, aryl, lower alkylaryl and lower arylalkyl, R_4 is selected from the group consisting of hydrogen, lower alkyl,

aryl, lower alkylaryl and lower arylalkyl, R_5 is selected from the group consisting of hydrogen, lower alkyl, aryl, lower alkylaryl, and lower arylalkyl, X is selected from the group consisting of alkylene, arylene, alkylarylene, arylalkylene, cycloalkylene containing secondary amino nitrogen, and cycloalkylene containing tertiary amino nitrogen, *the modification of said pigment surface by said organosilane comprising spray drying slurries of said pigment having one or more of the amino organosilanes dispersed therein.*

Re. 30,451

NOVEL PROCESS FOR PRODUCING ANTIBIOTICS BLEOMYCIN

Hamao Umezawa; Kenji Maeda, both of Tokyo; Tomohisa Takita, Asaka; Yuya Nakayama, Yono; Akio Fujii, Tokyo; Nobuyoshi Shimada, Tokyo, and Hideo Chimura, Tokyo, all of Japan, assignors to Zaidan Jojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

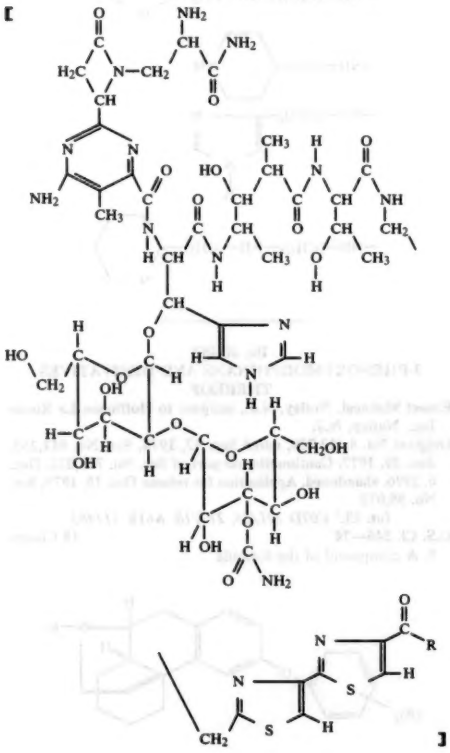
Original No. 3,846,400, dated Nov. 5, 1974, Ser. No. 291,079, Sep. 21, 1972. Continuation-in-part of Ser. No. 10,421, Feb. 11, 1970, abandoned. Application for reissue May 24, 1979, Ser. No. 41,996

Claims priority, application Japan, Feb. 15, 1969, 49-10774; Nov. 4, 1969, 49-87589

Int. Cl.[3] **C07C** *103/52;* **A61K** *37/00;* **C07A** *7/00*

U.S. Cl. 260—112.5 R **1 Claim**

1. Bleomycins having a structure represented by the formula,



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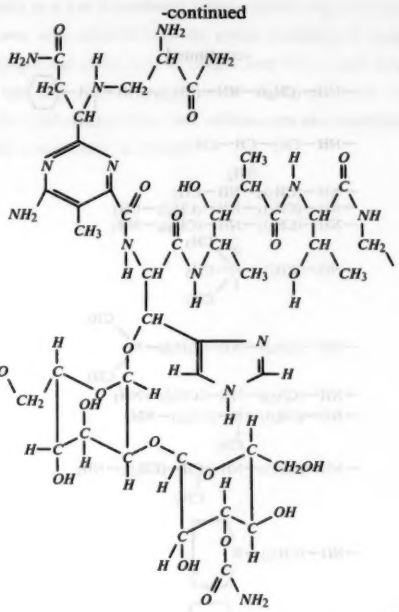
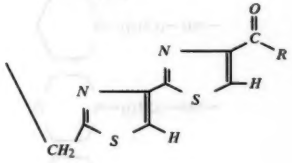
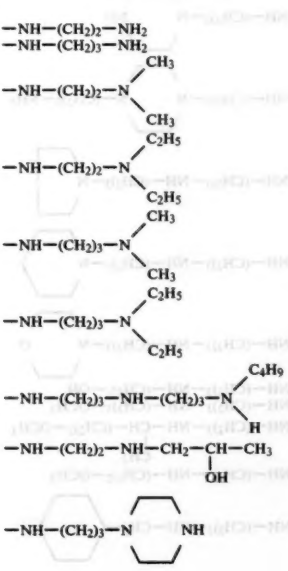




wherein R =



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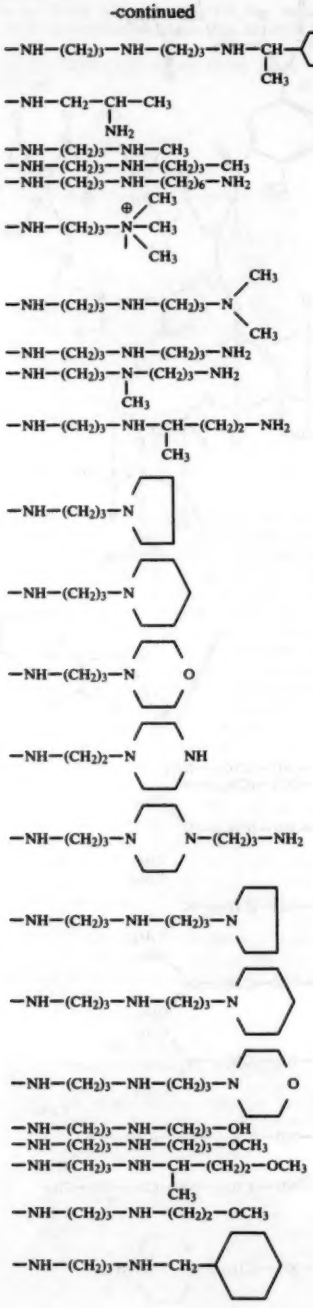

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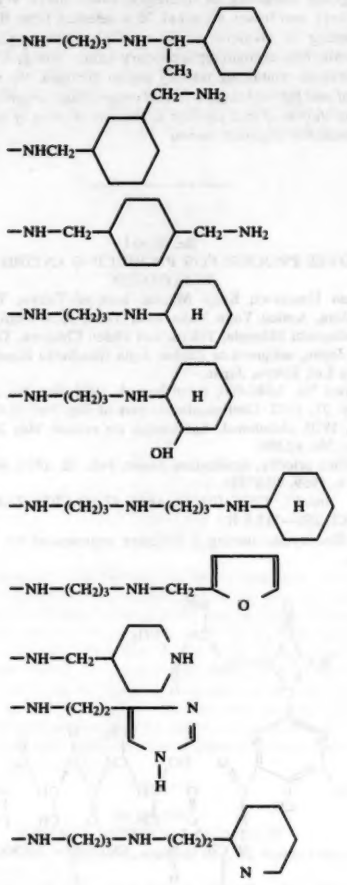


Re. 30,452

3-PHENOXYMORPHINANS AND DERIVATIVES THEREOF

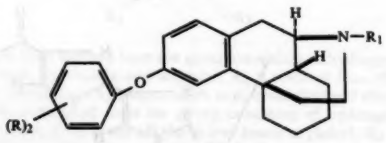
Ernest Mohacsi, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Original No. 4,113,729, dated Sep. 12, 1978, Ser. No. 811,233, Jun. 29, 1977. Continuation-in-part of Ser. No. 748,022, Dec. 6, 1976, abandoned. Application for reissue Oct. 15, 1979, Ser. No. 85,072

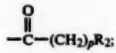
Int. Cl.[3] C07D *221/28, 217/18;* A61K *31/485*

U.S. Cl. 546—74 18 Claims

1. A compound of the formula



wherein R is halo, lower alkyl, lower alkoxy, hydroxy, nitro or hydrogen; R_1 is hydrogen, lower alkenyl containing from 2 to 7 carbon atoms, $-CH_2-(CH_2)_pR_2$, and



R_2 is phenyl, cyclo-lower alkyl containing from 3 to 6 carbon atoms, or a 5 or 6 membered heteroaromatic ring containing a hetero atom selected from the group consisting of oxygen, nitrogen and sulfur; p is an integer from 0 to 3; and n is an integer from 1 to 5; and the lower alkoxy and lower alkyl substituents contain from 1 to 7 carbon atoms and pharmaceutically acceptable salts thereof.

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PATENTS

GRANTED DEC. 16, 1980

ERRATA

For CLASS	See PATENT NO.
126–443	4,238,873
434–351	4,238,893
131–021 R	4,238,993
493–004	4,238,994
440–040	4,239,013
081–462	4,239,068
239–265.17	4,239,155
242–025 R	4,239,187
493–444	4,239,201
414–478	4,239,275
362–348	4,239,369
400–197	4,239,426
424–088	4,239,498
424–130	4,239,622
424–244	4,239,684
564–092	4,239,699
564–157	4,239,700
564–015	4,239,701
568–435	4,239,702
568–431	4,239,703
568–487	4,239,704
568–487	4,239,705
568–484	4,239,706
570–130	4,239,707
536–029	4,239,905
536–056	4,239,906
536–120	4,239,907
542–416	4,239,908
542–422	4,239,909
375–113	4,239,934
343–007 PL	4,240,076
318–114	4,240,141

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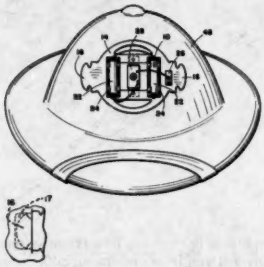
PATENTS

GRANTED DECEMBER 16, 1980

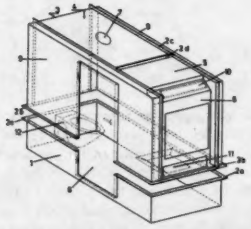
GENERAL AND MECHANICAL

4,238,857
SELF-CONTAINED AIR CONDITIONING UNIT FOR PERSONS
William A. Waters, 3648 E. 49th St., Tulsa, Okla. 74135
Division of Ser. No. 563,066, Mar. 28, 1975, Pat. No. 4,141,083, which is a continuation-in-part of Ser. No. 387,956, Aug. 13, 1974, Pat. No. 3,881,198. This application Sep. 22, 1978, Ser. No. 944,857
Int. Cl.³ A42C *5/04*
U.S. Cl. 2—171.3 **15 Claims**



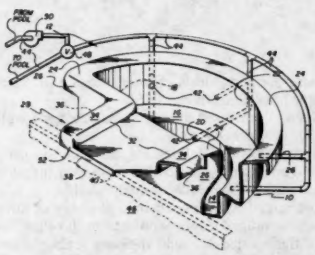
1. A self-contained detachable air conditioning unit for headwear and comprising housing means having grid element means provided therein permitting air flow therethrough, power means carried by said grid element means and extending into the interior of the housing means, impeller means carried by the power means and encased within the housing means and being rotatable by the power means for pulling air into the housing through said grid element means and discharging air from the housing, power supply means operably connected with the power means for selective activation thereof, and securing means provided on the housing means and cooperating between the housing means and headwear for removably securing the self-contained air conditioning unit to the headwear without alteration of the overall configuration and function of the headwear whereby said self-contained detachable air conditioning unit may be removed from the headwear for permitting conventional use of the headwear.

4,238,858
ABLUTION OR TOILET COMPARTMENT
Hans H. Maihart, Brühlerstrasse 79/2/2, 2340 Mödling, Austria
Filed Apr. 18, 1979, Ser. No. 31,144
Claims priority, application Austria, Apr. 20, 1978, 2802/78
Int. Cl.³ A47K *4/00*
U.S. Cl. 4—546 **7 Claims**



1. In an ablution compartment including a base tray having a periphery and a plurality of booth elements supported on said base tray, the improvement wherein said booth elements comprise a plurality of first wall elements and a plurality of second wall elements; each said first wall element being of an angled configuration having a single, substantially planar wall limb and a single, substantially planar ceiling limb arranged at right angles to the wall limb; each said second wall element having a wall surface and connecting two said first wall elements to one another; the wall limbs of said first wall elements and the wall surfaces of said second wall elements together forming an all-around enclosure above said base tray; the improvement further comprising securing means for tightly attaching said booth elements to one another and to said periphery of said base tray.

4,238,859
SPILL-OVER SPA
Sterling P. Badon, Jr., Carencro, La., assignor to Majestic Sales, Inc., Lafayette, La.
Filed Jun. 28, 1979, Ser. No. 52,837
Int. Cl.³ E04H *3/18*
U.S. Cl. 4—509 **3 Claims**



1. A device for installing adjacent an existing swimming pool for retaining a body of fluid for providing physical relaxation, therapy and enjoyment, said device communicating with the pool in a manner so as to preserve the integrity of the existing pool, said device comprising:

a body having a floor, a semi-annular seat, and sidewall means including a front wall, a lower circular wall, and an upper circular wall, said floor and sidewall means defining an enclosure for retaining a body of fluid,

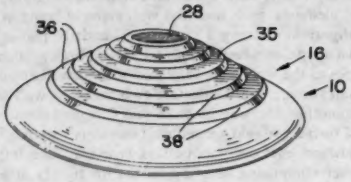
an upper peripheral edge portion connected to said sidewall means and including a side edge portion to provide structural support for the device when installed, and

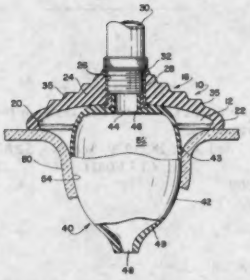
a transition section formed on and extending laterally outwardly from said body for permitting fluid within the device to flow from said device through said transition section and into the adjacent swimming pool, said transition section having a lower surface, a pair of sidewalls, a top edge portion joined to said upper peripheral edge portion of said sidewall means, an outer edge portion, and a spillway, said transition section lower surface including a downwardly extending lip depending from the edge of said transition section lower surface which engages an upper inner edge surface of the adjacent swimming pool to preclude the flow of fluid along the underside of the transition section.

4,238,860
WATER-PRESSURE, DRAIN-CLEANING DEVICE

Russel H. Dixon, 630 Tustin Ave., Newport Beach, Calif. 92663

Filed Jun. 13, 1979, Ser. No. 48,057
Int. Cl.³ E03D 11/00
U.S. Cl. 4—256 3 Claims





1. A water-pressure, drain-cleaning device in combination with a water hose comprising:

a cup-like body member having an outer ringed wall and an inner arcuate domed wall;

an inner cup chamber defined by said inner arcuate domed wall and an annular lip member formed at the terminating annular edge of said inner arcuate wall;

said outer ringed wall defined by a plurality of annular rim members arranged contiguously to each other, each having a different size diameter defining sealing means when disposed over a corresponding opening of a drain;

wherein each of said annular rim members includes a flat sealing surface and an inclined sealing surface for positive sealing engagement with said drain opening;

said cup-like body including a central bore communicating with said cup chamber, said bore having a threaded sleeve member affixed therein to removably receive said water hose therein from either side of said sleeve member; and

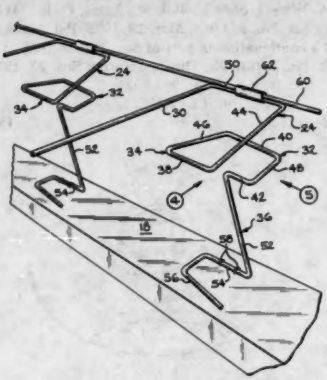
a removable plug fitting having an inlet port and an outlet port, said inlet port being adapted to be secured to said threaded sleeve member of said cup body, said plug fitting being formed from a resilient material so as to expand under water pressure, whereby said plug fitting conforms to the configuration of said adjacent drain opening.

4,238,861
BOX SPRING ASSEMBLY WITH LIMITED DEFLECTION FORMED WIRE SPRINGS

Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.

Filed May 14, 1979, Ser. No. 38,536
Int. Cl.³ A47C 23/02, 23/00
U.S. Cl. 5—247 8 Claims

1. In a box spring assembly which includes a generally rectangular frame, a plurality of limited deflection wire springs mounted on said frame and connected to each other so as to yieldably resist downwardly directed bedding loads, each of said springs being formed of spring steel wire and having an elongated body portion arranged above said frame and downwardly extending end portions, each of said end portions having an upper section and a lower section, said upper section comprising a plurality of substantially horizontal torsion bars and a plurality of angularly arranged connecting bars connected to and extending between said torsion bars, said torsion

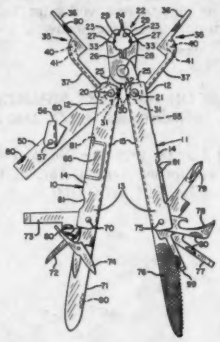


bars being movable in response to torsional stressing thereof to enable downward yieldable collapsing deflection of said upper section, said torsion bars and connecting bars in said upper section being relatively arranged so that the upper one of said connecting bars engages the lower one of said torsion bars in the fully deflected condition of said upper section, said lower section comprising an an upwardly extending column of wire, and means mounting said column on said frame.

4,238,862
POCKET MULTIPLE TOOL

Timothy S. Leatherman, 2010 NE. 91st Ave., Portland, Oreg. 97220

Filed Jul. 13, 1978, Ser. No. 924,180
Int. Cl.³ B25B 7/22
U.S. Cl. 7—128 23 Claims



1. A multiple instrument comprising a pair of cross jaw pliers having a pair of plier jaws pivotally connected together between nose ends and shank ends of the jaws, a first auxiliary jaw pivoted to said shank end of one of said cross jaws and engagable with said nose end of the other cross jaw, and a second auxiliary jaw pivoted to said shank end of the other cross jaw and engagable with said nose end of said one cross jaw, said auxiliary jaws being disengagable from said nose end of said cross jaws when using said cross jaws.

4,238,863
METHOD OF WASHING ARTICLES OF CLOTHING

Earl S. Tupper, Nassau, The Bahamas, assignor to TUPI (Panama) S.A., Panama City, Panama

Continuation of Ser. No. 634,555, Nov. 24, 1975, abandoned, which is a continuation of Ser. No. 260,250, Jun. 6, 1972, abandoned. This application May 26, 1978, Ser. No. 910,036
Claims priority, application United Kingdom, Jun. 8, 1971, 19750/71; Jul. 30, 1971, 36067/71
Int. Cl.³ D06F *1/00, 1/10, 51/00*
U.S. Cl. 8—150 **1 Claim**

1. A method of washing articles of clothing comprising the steps of

(a) providing an elongated substantially tubular member of substantially rigid construction and made of a synthetic plastic material, said member being closed at each end, and each such end having a rounded configuration, at least one end being provided with a suitable handle for gripping, and a watertight disengageable closure intermediate the ends of said member, said tubular member having a plurality of undulating regions situated along its longitudinal axis and intruding transversely into the interior thereof to a substantial extent sufficient to promote turbulence of the water and tumbling of articles of clothing when the member is partly filled with water and said articles of clothing and shaken and thereby aid in the washing of said articles of clothing in said water, said intruding regions being visible in one longitudinal cross section but not visible in the longitudinal cross section at right angles thereto, said intruding regions being located to define an essentially unconstricting internal space within the tubular member in order to facilitate general transfer of water and articles of clothing from one end thereof to the other, and a transversely extending perforated plate disposed within at least one end of the member;

(b) releasing said disengageable closure;

(c) introducing articles of clothing and water into said member;

(d) replacing said closure;

(e) vigorously agitating said clothing by shaking said member;

(f) grasping said handle;

(g) whirling said tubular member for centrifugally removing excess water from said articles of clothing such that water passes through said perforated plate and is collected within said end of the member across which said perforated plate lies; and

(h) releasing said collected water and said clothing separately from said member.

4,238,864
DIVER'S FLOATER

Gregory Kealoha, 1234 13th Ave., Honolulu, Hi. 96816

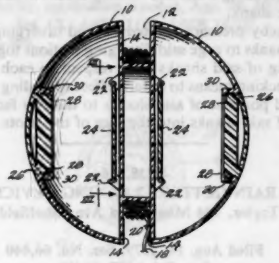
Filed Jun. 20, 1978, Ser. No. 917,362
Int. Cl.² B63B *21/52*
U.S. Cl. 9—8 R **13 Claims**

1. A diver's floater comprising:

a float body having an average specific gravity less than that of water;

flexible means, having one end attached to said float body, for connecting said float body to said diver, said flexible means being wound around said float body during storage; and

retaining means, attached to said float body and operatively associated with said flexible means, for maintaining preselected points of said flexible means proximate said float body until a predetermined force is applied to said flexible means, said preselected points being separated by a distance greater than the circumference of said float body,

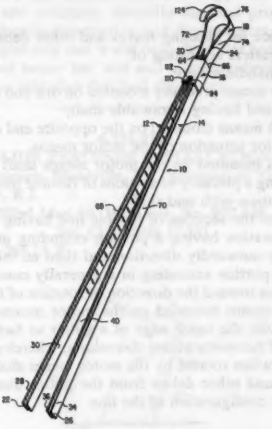


and said retaining means for preventing more than preselected lengths of said flexible means from unwinding from said float body until said predetermined force is applied to said flexible means, said lengths being greater than the circumference of said float body.

4,238,865
BOOT SUPPORT DEVICE

Bertil Ingemann, Kristinelund, 235 00 Vellinge, and Bertil Persson, Kerstis Vag 12 Hjarup, 222 48 Lund, both of Sweden

Continuation-in-part of Ser. No. 788,970, Apr. 19, 1977, abandoned. This application Apr. 4, 1979, Ser. No. 27,119
Claims priority, application Sweden, Apr. 21, 1976, 7604559
Int. Cl.² A43D *5/00*; A44B *21/00*; A47F *7/08*
U.S. Cl. 12—114.8 **22 Claims**



1. A boot support device for boots having upstanding legs with inside surfaces, the boot support device comprising:

(a) a pair of shanks;

(b) said shanks including means for engaging the inside surfaces of the legs of the boots and for pressing the legs against each other, each shank having a first and a second end, said first ends of both shanks being disposed adjacent each other and second ends of both shanks being disposed adjacent each other;

(c) means for effecting a rocking movement between said shanks by engagement of said shanks with each other, said rocking means being disposed closer to said first ends of said shanks than said second ends, said shanks each includ-

ing sections diverging from each other in a direction from said rocking means toward said first ends, said shanks including first portions, each first portion extending from said rocking means to said first end of one shank, said shanks also including second portions, each second portion extending from said rocking means to said second end of one shank;

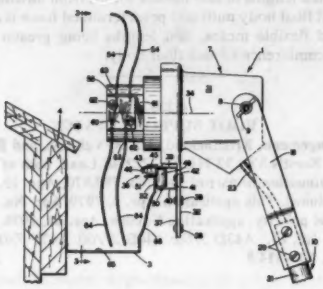
(d) whereby pressure exerted on said diverging sections of said shanks to urge said diverging sections together effects rocking of said shanks with respect to each other about said rocking means to in turn effect spreading apart of said second portions of said shanks to thereby facilitate insertion of said shanks into the legs of the boots.

4,238,866

RAIN GUTTER CLEANING DEVICE

Nelson D. Taylor, 734 Maplewood Ave., Sheffield Lake, Ohio 44054

Filed Aug. 14, 1979, Ser. No. 66,440
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—23 **10 Claims**



1. A device for cleaning leaves and other debris from rain-collecting gutters consisting of:

(a) rigid handle means;

(b) motor means pivotally mounted on one end of the handle means and having a rotatable shaft;

(c) switch means mounted on the opposite end of the handle means for actuation of the motor means;

(d) means mounted on the motor means shaft for securely clamping a plurality of sections of flexible line on the shaft for rotation with said shaft;

(e) each of the sections of flexible line having a preformed configuration having a portion extending in a generally radially outwardly direction and then an integrally connected portion extending in a generally concavely curve direction toward the direction of rotation of the shaft; and

(f) roller means mounted on the motor means for engagement with the outer edge of a gutter to facilitate movement of the motor means therealong, whereby the sections of line when rotated by the motor means shaft will scoop leaves and other debris from the gutter due to the preformed configuration of the line.

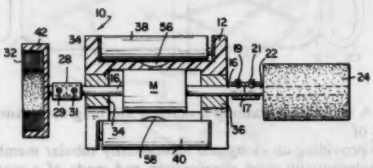
4,238,867

TUBE ABRADING TOOL

Salvatore Ruggero, and Joseph Ruggero, both of 84-05 101st Ave., Ozone Park, N.Y. 11416

Filed Jul. 27, 1979, Ser. No. 61,189
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—88 **3 Claims**

1. A tool for abrading the terminal ends of tubing comprising an I-shaped housing having a cylindrical central portion of fixed diameter and flange portions on opposite ends of said cylindrical portion each having the same diameter, which diameter is greater than the fixed diameter of the central cylindrical portion, the central cylindrical portion of said housing having a pair of indentations formed therein on diametrically opposed sides which indentations serve as a holding means for said tool during use, electrical contacts mounted on opposed inner surfaces of said flange members, said flange members adapted to support a longitudinally oriented electrical battery between the inner opposed surfaces thereof in electrical contact with the electrical contacts thereon, an electric motor mounted in the cylindrical central portion of said housing having electrical connection to the electrical contacts on the housing flanges whereby electrical power can be conveyed to operate the motor, said electric motor having two shafts mounted for rotation by said motor extending longitudinally



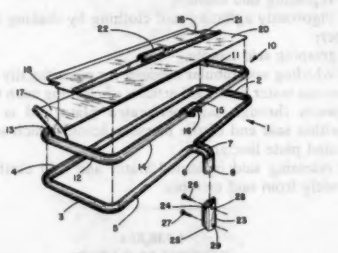
from opposite ends of said housing, a male abrasive member including a wire brush secured to one of said shafts and a female abrasive member including a wire brush secured to the other end of said shafts, said female abrasive member adapted for enveloping and rotatably and abrasively engaging the outer surface of an end of the length of tubing, said male abrasive member adapted for insertion into and rotatably and abrasively engaging the inner surface of the end of a length of tubing so that both the inner and outer surfaces of the end of the length of tubing may be abraided to permit subsequent joining of the tubing to a like abraided tubing to form a continuous length of tubing.

4,238,868

REFUSE BAG HOLDER

Gerd Sternberg, 6785 W. Garden Grove, Las Vegas, Nev. 89103

Filed Apr. 30, 1979, Ser. No. 34,398
Int. Cl.³ A47F *13/08*
U.S. Cl. 15—257.4 **7 Claims**



1. A refuse bag holder for supporting disposable plastic refuse bags comprises a rigid rectangular bag-supporting loop, an annular clamping frame having a slot along the bottom portion thereof, said slot dimensioned to forcibly receive the bag-supporting loop, the cross-section of the bag-supporting loop being of similar shape to the cross-section of the clamping frame such that a refuse bag clamped therebetween is frictionally retained in place, and a flat, rigid scoop extending outwardly from the clamping frame, and handle means located on a side of the refuse bag holder opposite the scoop, said handle means also comprising mounting means for removably attaching the refuse bag holder to a structure.

4,238,869

LIQUID ASPIRATOR

Fernand Lachance, 330, 153e Rue Est, Ville St-Georges, Beauce, Quebec, Canada (G5Y 2J6)

Filed Nov. 24, 1978, Ser. No. 963,367
Claims priority, application Canada, Mar. 20, 1978, 299285
Int. Cl.[3] A47L 7/00
U.S. Cl. 15—353 9 Claims

1. A liquid aspirator for removing liquids from a flooring surface attachable to a vacuum cleaner comprising, in combination:

an elongated body-reservoir for retaining collected liquid therein including a liquid pick-up nozzle means at the lower end thereof and a unitary closure lid at the other, and a central tube positioned in the central axis of and extending substantially through said body-reservoir, the lower end of said tube communicating with said liquid pick-up nozzle means and the upper end thereof terminating adjacent said closure lid, the interior of said body-reservoir including a plurality of braces extending between the opposing inner walls of said body-reservoir to support the inner walls of said body-reservoir, preventing buckling of said supported inner walls due to suction present in said body-reservoir while said aspirator is in use,

inverted cup means spaced radially about the upper end of said tube for directing the flow of liquid therethrough downward from said tube away from said unitary closure lid and into said reservoir,

said closure lid including an integral handle means for holding and moving said liquid aspirator in use and attachment means defining a channel in flow communication with said body-reservoir for receiving the hose of a vacuum cleaner,

liquid attenuating filter means positioned between said body-reservoir and said closure lid for retaining the sprayed water which may be discharged past said inverted cup, and

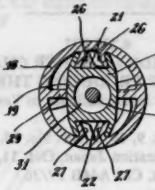
valve means for occluding air communication between said body-reservoir and said vacuum cleaner attachment means when the liquid in said body-reservoir reaches a predetermined level, said valve means including a float slidably retained within said body-reservoir actuating a rod and, in turn, a valve positioned within the channel of said attachment means.

4,238,870

BRUSH-BEATER ROLLER FOR A VACUUM CLEANER

Karl L. Fahlen, Marsta, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Continuation of Ser. No. 897,446, Apr. 18, 1978, abandoned.
This application Jul. 16, 1979, Ser. No. 57,551
Claims priority, application Sweden, Apr. 29, 1977, 7705003
Int. Cl.[3] A47L 5/30; A46B 13/02
U.S. Cl. 15—389 5 Claims



2. A brush-beater roller mounted in a vacuum cleaner housing of a vacuum cleaner comprising: an elongated roller body of a generally rectangular cross section having two short sides, means supporting said roller in said housing, a drive belt pulley on said roller body, the latter being helically twisted about its longitudinal axis and provided with a continuous dovetail slot along the entire length of said roller body in each of said short sides, a pair of brush bristle holders and a beater bar being adapted to be accommodated in said dovetail slots, said beater bar being grooved on a part of its length corresponding to the width of said belt pulley, one of said brush bristle holders and said beater bar at one end of said roller body being provided with projections which extend laterally toward the long side of said roller body, shoulders on said roller body coacting with said projections thereby preventing movement of said beater bar and brush bristle holder toward the opposite end of said roller body, and obliquely inwardly directed projections on said drive belt pulley inserted in said dovetail slots, said pulley being an integral ring that is slid onto the roller body with said brush strip and beater bar, and said inwardly directed projections sliding in said slots for final alignment.

4,238,871

SLIDE FASTENER INSTALLATION

Robert E. Cannon, Meadville, Pa., assignor to Textron, Inc., Providence, R.I.

Filed May 19, 1978, Ser. No. 907,633
Int. Cl.[2] A44B 19/00
U.S. Cl. 24—205.11 R 12 Claims

1. A slide fastener comprising a pair of slide fastener stringer tape sections;

a plurality of slide fastener coupling elements mounted on each stringer tape section, each coupling element having a head portion and a pair of legs extending therefrom;

at least one slider entrained on the coupling elements of the two stringer tape sections for movement therealong; and

a separating end stop at one end of the slide fastener, the separating end stop including a retaining end stop on one stringer tape section to retain the slider thereon and a

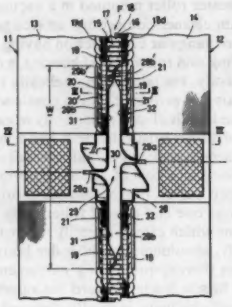
separating end device on the other stringer tape section, the separating end device including a plurality of substantially undeformed severed pairs of leg portions of coupling elements from which the head portions have been removed and a thermoplastic film folded over the severed leg portions and bonded to the opposite sides of the other stringer tape section, said thermoplastic film reinforcing the other stringer tape section and severed leg portions and being sufficiently thin to permit movement of the separating end device through the slider.

4,238,872

SEPARABLE SLIDE FASTENER CHAIN AND A METHOD OF PRODUCING THE SAME

Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 9, 1979, Ser. No. 82,621
Claims priority, application Japan, Oct. 11, 1978, 53-124940
Int. Cl.³ A44B *19/36*
U.S. Cl. 24—205.11 F **4 Claims**



1. A separable slide fastener chain comprising a pair of oppositely disposed stringers of continuous length each having a support tape and a fastener element formed from a plastic monofilament into a continuous structure having coupling head portions and secured by sewn seams to a longitudinal inner edge of the respective tape, said fastener element being fused together over a predetermined length of the two coupled stringers at predetermined intervals, and a composite pin-forming structure located centrally of the fused length of the fastener element and cut out to produce a multi-form aperture having a pair of bay portions extending transversely of the fastener chain and oppositely disposed in point-symmetry relation and a pair of elongated canal portions extending longitudinally closely along the sewn seams, said composite structure being subdivisible across said bay portions into two identical pairs of slider-lock pin members and inserting pin members.

4,238,873

APPARATUS FOR COLLECTING AND TRANSPORTING HEAT ENERGY

Matthew W. Frank, and Donald E. Oberbeck, both of Boulder, Colo., assignors to Entropy Limited, Boulder, Colo.

Filed Mar. 13, 1978, Ser. No. 885,501
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **13 Claims**

1. An apparatus for collecting and transporting thermal energy as the vapor of a selected fluid, from a heat source having an intensity sufficient to vaporize the fluid, and to a location where condensation will occur, and comprising:

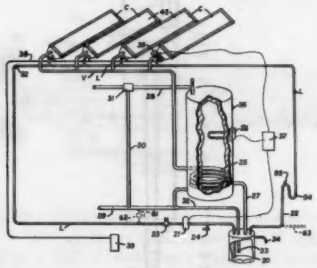
(a) an elongated heat absorption chamber exposed to the heat source and positioned substantially horizontally to provide an elongated lower portion within the chamber constituting a sump to hold a puddle of said fluid and an elongated upper portion above the puddle constituting a vapor space;

(b) a vapor transport conduit extended from the chamber above the puddle and to said location; and

(c) a fluid inflow means adapted to supply fluid to the puddle and maintain the level of the puddle as fluid therein evaporates when the chamber is heated;

wherein said fluid inflow means includes:

(d) a fluid supply line adjacent to the chamber and means to partially fill the fluid supply line to a substantially constant free surface fluid level which is essentially the same as the fluid level of the puddle;



(e) a conduit connecting the supply line and the sump which is below the said fluid levels to form a trap to provide continuous communication of fluid from the supply line to the puddle;

(f) a means to balance the pressures in the chamber and in the fluid supply line to maintain the aforesaid same fluid levels in the chambers and in the supply line; and

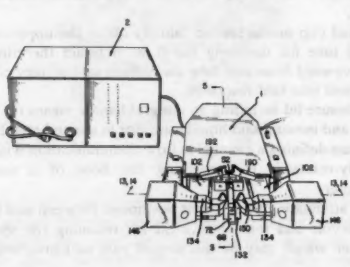
(g) the source end of the fluid supply line being above the heat absorption chamber to permit a continuous flow of fluid to be supplied from a high point in the line and to flow past the chamber.

4,238,874

TOOLING WITH STEPPING MOTOR DRIVE

William B. Chandler, Winston-Salem; John D. Davis, Lexington, and Ronald G. Sergeant, Winston-Salem, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 31, 1978, Ser. No. 929,742
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—33 M **11 Claims**



1. In apparatus, having an anvil for mounting an electrical connector, tooling for trimming and inserting electrical wires of a multiple wire cable into successively arranged electrical contacts contained in an electrical connector mounted on said anvil, and a stepping motor drive for transporting and repeatedly stopping the tooling successively in alignment with the

contacts preparatory to insertion of corresponding trimmed wires therein, the improvement comprising:

a carriage fixedly mounting said tooling thereon,

said carriage and said tooling being connected as a unit to said stepping motor drive and being transported by said stepping motor drive as a unit along an electrical connector mounted on said anvil,

said carriage engages said anvil before and after mounting of an electrical connector thereon, and

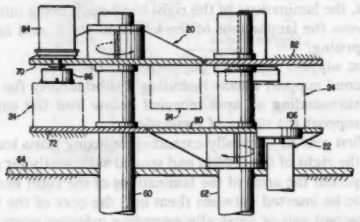
said carriage includes means for engaging and following a reference surface of said connector during transport along said connector and during precise alignment of said tooling with each successive contact in said electrical connector during wire trimming and insertion of a trimmed wire into each successive contact.

4,238,875

METHOD OF AND APPARATUS FOR PERFORMING WORK FUNCTIONS ON ARTICLES FROM OPPOSITE ENDS OF THE ARTICLES

Robert J. Van Sickle, Richmond, Va., assignor to Rail Bearing Service, Richmond, Va.

Filed Mar. 15, 1979, Ser. No. 20,731
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—148.4 S **27 Claims**



1. A method of performing work functions on articles from opposite ends of said articles with the aid of twin turrets, a first of said turrets being elevated with respect to the second to present a bottom datum surface while the second of said turrets presents a top datum surface, said method comprising the steps of

a. conveying articles seriatim to a first work station beneath said bottom datum surface,

b. lifting and holding an article to travel with and be associated with said bottom datum surface,

c. indexing said article with said first turret,

d. performing work functions on said article from beneath said article while it is associated with said bottom datum surface,

e. transferring said article to said top datum surface of said second turret,

f. indexing said article with said second turret,

g. performing work functions on said article from above said article while it is on said top datum surface,

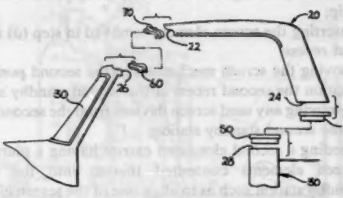
h. and removing said article from said second turret.

4,238,876

METHOD FOR CONVERTING HARD TOP VEHICLES TO REMOVABLE TOP VEHICLES

Gary S. Monroe, Encino; Robert L. Contreras, both of 21601 Erwin St. #285, Woodland Hills, Calif. 91367, and Gregory C. Hummel, 1832 N. Naomi, Burbank, Calif. 91505, assignors to Gary S. Monroe; Robert L. Contreras; Gregory C. Hummel and Barry A. Russell, all of Los Angeles, Calif.

Filed Sep. 5, 1978, Ser. No. 939,230
Int. Cl.³ B22D *19/10*; B23P *7/00*
U.S. Cl. 29—401.1 **5 Claims**



1. A method for converting a hardtop vehicle to a removable hardtop vehicle comprising the steps of:

(a) severing a predetermined portion of the roof of a vehicle from the body of the vehicle thereby exposing the cavity between the inner and outer walls of said roof and vehicle;

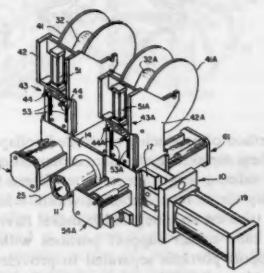
(b) providing the severed portion of the roof and the body portion of the vehicle with joining means for removably rejoining said severed portion to said body portion said joining means having lip portions to conceal the edges of said severed portions and of said vehicle and further having a body portion extending into the cavity between the inner and outer walls of said roof and vehicle.

4,238,877

FABRICATION OF SCREEN DEVICES

Willard E. Rapp, Griggstown, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,633
Int. Cl.³ B29F *3/00*
U.S. Cl. 29—402.11 **9 Claims**



1. The method of replacing the used screen devices of a screen mechanism employed to screen the extrudate of a plastics extruder, the screen mechanism having at least first and second screen receiving recesses and being movable between a first and second position, in the first position, the first recess being outside of the path of the extrudate at a first standby station while the second recess is in the path of the extrudate and, in the second position, the second recess being outside of the path of the extrudate at a second standby station while the

first recess is in the path of the extrudate, which method comprises the steps of:

(a) moving the screen mechanism to the first position to position the first recess at the first standby station;
(b) removing any used screens from the first recess at the first standby station;
(c) feeding a first elongated carrier having a plurality of screen elements connected thereto into the first standby station such as to align one of the screen elements thereof with the first recess when the first recess is positioned in the first standby station;
(d) removing an aligned screen element from the first carrier strip;
(e) inserting the screen element removed in step (d) into the first recess;
(f) moving the screen mechanism to the second position to position the second recess at the second standby station;
(g) removing any used screen devices from the second recess at the second standby station;
(h) feeding a second elongated carrier having a plurality of screen elements connected thereto into the second standby station such as to align one of the screen elements thereof with the second recess when the second recess is positioned in the second standby station;
(i) removing the aligned screen element from the second carrier strip; and
(j) inserting the screen element removed in step (i) into the second recess.

4,238,878

METHOD AND APPARATUS FOR FORMING SHROUD

Robert H. Stamm, Canton, and Fred E. Krause, Detroit, both of Mich., assignors to Brooks & Perkins, Incorporated, Southfield, Mich.

Filed Mar. 9, 1979, Ser. No. 18,263
Int. Cl.[3] B21D *26/02, 39/04;* B23P *11/02, 19/00*
U.S. Cl. 29—421 R **15 Claims**

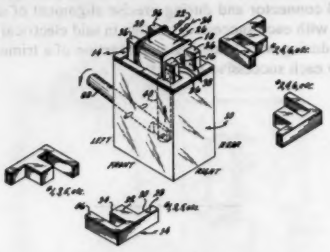
1. The method of producing controlled collapse of an elongated thin sheet metal tube of square cross-section having four initially flat sides, a length up to about fifteen feet and sides approximately six to nine inches in width, which comprises placing the tube on an elongated mandrel having four elongated rigid tube corner support portions with peripherally adjacent support portions separated to provide clear spaces into which side walls of the tube may be displaced, in which the dimension between diametrically opposite tube engaging surfaces of the corner support portions is slightly less than the internal dimension between opposite corners of the tube, sealing the ends of the tube, and evacuating the interior of the tube, to produce a controlled collapse of the tube in which its corners collapse radially inwardly to engage the radially outer tube engaging surfaces of the corner support portions and its initially flat sides are collapsed inwardly by atmospheric pressure to assume an inward curvature controlled by the separation between the tube engaging surfaces of the tube supports.

4,238,879

LAMINATED INDUCTOR STACKING AND CALIBRATING APPARATUS

Cyril P. Zarlinden, III, 5635 Pineglen Rd., La Crescenta, Calif. 91214; Charles W. Howe, 8259 Kyle St., Sunland, Calif. 91040, and John M. Podry, 4953 Del Monte Rd., La Canada, Calif. 91011

Filed Aug. 16, 1978, Ser. No. 933,992
Int. Cl.[2] H01F *41/02*
U.S. Cl. 29—705 **9 Claims**



1. Apparatus to facilitate manual assembly and subsequent calibration of the type of inductor which includes a wire-wound bobbin having a hollow core extending from left to right for ease of description, and which further includes plate-like laminations each having an arm extending from an edge of the body of the lamination, the arms extending axially into the core from the left and right ends of the core, the ends of the arms being spaced apart to define an air gap within the bobbin, the laminations which extend into the core from the right end being stacked one on top of another with their arms in registration to form a right hand stack, the laminations which extend into the core from the left end being stacked one on top of another with their arms in registration to form a left hand stack, the laminations of the right hand stack being interleaved between the laminations of the left hand stack, said apparatus comprising:

first support means for supporting the bobbin;

second support means including a substantially flat surface surrounding an area recessed below said flat surface to support the stacks of laminations;

a first pair of vertically-extending indexing posts located to the right of the bobbin and spaced sufficiently far apart to permit the arms of the laminations of the right hand stack to be inserted between them into the core of the bobbin;

a second pair of vertically-extending indexing posts located to the left of the bobbin and spaced sufficiently far apart to permit the arms of the laminations of the left hand stack to be inserted between them into the core of the bobbin;

said first pair of indexing posts located far enough to the right of said second pair of indexing posts that after each lamination has been inserted with the edge of its body against said indexing posts, the ends of the arms of the laminations are spaced to provide a predetermined air gap;

said indexing posts extending upwardly from the plane of the substantially flat surface of said second support means while the laminations are being stacked and being movable vertically under control of an operator after the laminations have been stacked to permit movement of the stacked laminations in directions parallel to the substantially flat surface of said second support means;

a first set of vice-like jaws which move along the substantially flat surface of said second support means in a front-rear direction perpendicular to the left-right direction to close against the stacks of laminations under control of an operator to bring the front edges of the laminations into registration and the rear edges of the laminations into registration;

a second set of vice-like jaws which close in the left-right direction along said substantially flat surface to force the right hand stack and the left hand stack together under control of an operator to reduce the width of the air gap;

at least one set of said first and said second set of jaws being less wide than the width of the inductor in a direction perpendicular to the direction of closure, to prevent the sets of jaws from interfering with each other; and further comprising,

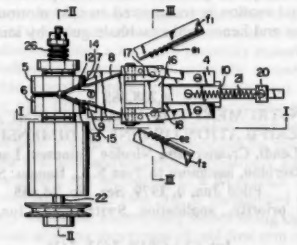
an impedance comparator electrically connected to the inductor and including a display indicative of the difference between the inductance of the inductor being calibrated and the inductance of a standard inductor as said second set of jaws is closed by the operator, to indicate to the operator when the inductance of the inductor being calibrated is approaching the inductance of the standard inductor.

4,238,880

ASSEMBLING APPARATUS FOR SLIDE FASTENER STRINGERS

Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Dec. 12, 1978, Ser. No. 968,801
Claims priority, application Japan, Dec. 15, 1977, 52/151125
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—766 **4 Claims**



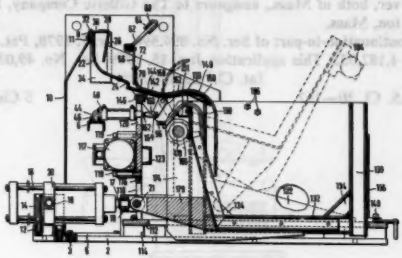
1. An assembling apparatus for a pair of fastener stringers each having a row of fastener elements therealong, comprising a pair of pulling rollers rotatably mounted close to each other on a driving shaft with a space therebetween, a pair of auxiliary rollers in contact with the pulling rollers and providing therewith a pair of inlet nips for pulling the respective stringers, and a binder member fixedly position at the inlet nip side of said pulling rollers and having a pair of guide grooves for directing the stringers into the respective nips, characterized in that a pair of probes are each mounted for freely transversely entering or withdrawing from a guide groove in said binder member for the fastener elements, said probes serving to detect leading fastener elements on a leading stringer and to retard the advancement of the leading stringer when the fastener elements thereon come in contact with a respective probe, and a differential transmission mechanism connected between said pulling rollers for retarding one of the pulling rollers which is advancing the leading stringer and simultaneously accelerating the other of the pulling rollers which is advancing the other stringer to longitudinally align mismatched rows of elements on the pair of stringers.

4,238,881

APPARATUS FOR ASSEMBLING ELONGATED PIECES INTO BUNDLES

Bodo Missmahl, Düsseldorf, and Georg Streit, Mettmann, both of Fed. Rep. of Germany, assignors to Malmedie & Co. Maschinenfabrik GmbH, Düesseldorf, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,123
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826738
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—822 **16 Claims**



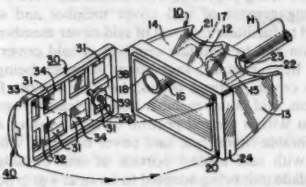
1. Apparatus for assembling straight pieces of wire, directed and cut to length, comprising: a base frame; a support frame mounted elastically to the base frame; jolting means for jolting the support frame; guide sheet arrangement attached at least in part to the support frame for transporting and directing the wire pieces; assembling means comprising at least a rocking lever which can be controllably lifted up or lowered down; and bundling means for providing a belt band to bundle a defined amount of wire pieces.

4,238,882

RESERVOIR SAFETY RAZOR

Jack R. Harrison, Sr., 9209 Ferndale Rd., Dallas, Tex. 75238

Filed Sep. 26, 1979, Ser. No. 78,984
Int. Cl.³ B26B *21/00*
U.S. Cl. 30—41 **9 Claims**



1. A reservoir safety razor of the type including a handle and a body portion attached to the handle and operative to contain a shaving liquid and to support a razor blade oriented crosswise of the handle, said body portion comprising:

a reservoir fixed at one end to the handle and having an opening extending across the other end of the reservoir and oriented crosswise of the handle;

a filling tube in the reservoir passing through said one end thereof alongside the handle and extending substantially to and facing toward said opening;

a head removeably attachable to said reservoir to close said opening, the head having outer surfaces oriented crosswise of the handle and supporting said blade in operative shaving position, the head having multiple capillary-size ports extending from the reservoir through said outer surfaces and into communication with surfaces of the blade which overlie the ports;

a cap supported by the head and overlying the blade to urge it toward said outer surface; and

valve means supported by the head and moveable toward and away from the filling tube, the valve means being buoyant in the saving liquid so that it tends to close the filling tube when the razor is held with its handle extending upwardly.

4,238,883

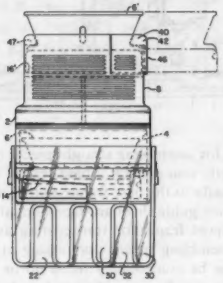
SCRAPER ASSEMBLY WITH BLADE LOCK MEANS

Chester F. Jacobson, Southboro, and Norman D. Poisson, Andover, both of Mass., assignors to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 894,596, Apr. 7, 1978, Pat. No. 4,182,033. This application Jun. 15, 1979, Ser. No. 49,038

Int. Cl.³ B26B *5/00*

U.S. Cl. 30—162 **5 Claims**



1. A scraper assembly comprising a housing having two generally parallel elongated sides interconnected by first and second ends and having a head portion adapted to receive and retain a blade unit, and a cover member adapted to cover said blade unit retained by said head portion, said cover member having two generally parallel elongated walls engageable with said sides respectively, and first and second end walls engageable with said ends respectively, said cover member and said head portion being provided with detent and recess means to facilitate engagement of said cover member and said head portion and to facilitate removal of said cover member and said head portion and to facilitate removal of said cover member from said head portion, said cover member being further adapted to cover portions of said housing remote from said head portion, said cover member being releasably retained by engagement with a second portion of said housing and completely separable therefrom, said cover member, when in engagement with said second portion of said housing remote from said blade unit being adapted to serve as a grip portion for said assembly, whereby said cover member may be selectively positioned to cover said blade unit and may be removed therefrom and positioned on said housing remote from said blade unit to expose said blade unit for scraping operations, and may be completely removed from the remainder of said assembly, and lock means for locking said blade unit in said head portion.

4,238,884

ORBITAL JIG SAW

Richard E. Walton, II, Fallston, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Jun. 19, 1979, Ser. No. 50,043

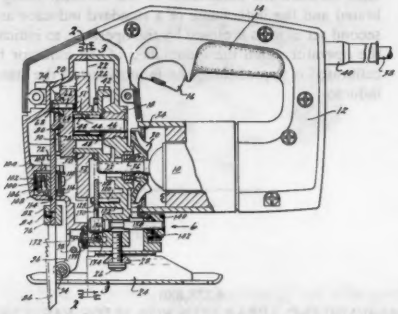
Int. Cl.³ B23D *49/00*; B27B *11/00*

U.S. Cl. 30—393 **25 Claims**

1. An orbit adjusting mechanism for an orbital jig saw having a casing containing a motor driven reciprocal saw blade carrier and oscillating orbital drive means, and a movable saw blade guide supported by the causing and positioned to engage the trailing edge of a reciprocating saw blade carried by the saw blade carrier, said mechanism comprising:

a level supported by said casing for pivotal movement about a first axis, said lever being operatively connected to said orbital drive means so that the latter causes said lever to oscillate about said first axis;

motion translating means movably supported by said casing, said motion translating means engaging said oscillating lever in all operative positions thereof and coacting with said saw blade guide, whereby motion of said oscillating lever is transmitted to said saw blade guide; and



orbit adjusting means for moving said motion translating means with respect to said oscillating lever from a first position in which said motion translating means engages said lever at a first point aligned with said first axis, wherein no motion is transmitted to said motion translating means by said oscillating lever, to a second position in which said motion translating means engages said lever at a second point space from said first point, wherein substantial motion is transmitted to said motion translating means and hence said saw blade guide by said oscillating lever.

4,238,885

INSTRUMENT FOR MEASUREMENT AND VERIFICATION OF LINEAR DIMENSIONS

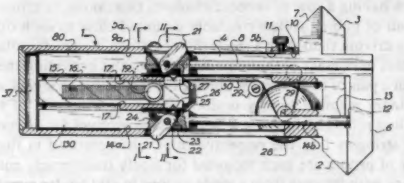
Georges Lendi, Crissier, and Nicolae Voinescu, Lausanne, both of Switzerland, assignors to Tesa S.A., Renens, Switzerland

Filed Jun. 8, 1979, Ser. No. 46,655

Claims priority, application Switzerland, Jun. 19, 1978, 6636/78

Int. Cl.³ G01B *7/02, 7/26*

U.S. Cl. 33—143 L **10 Claims**



1. An instrument for the measurement and verification of linear dimensions, comprising a body equipped with a fixed external feeler and a fixed internal feeler, a perch mounted in a slideway in the body and equipped with an external feeler and an internal feeler cooperating with the corresponding fixed feelers of the body, a depth feeler gauge independent of the body, said depth feeler gauge mounted in a second slideway of the body, a perch locking member, a contact member fixedly arranged on the external feeler of the perch, opposite the external feeler of the body, a feeler rod movable in a third

slideway of the body and cooperating with the fixed contact member of the external feeler of the perch, a measurement transducer interposed between the body and said perch, depth gauge and feeler rod for translating the displacements thereof into measurement values, said measurement transducer having a movable member independent of the perch, depth gauge and feeler rod, at least one selective coupling device interposed between said movable member of the measurement transducer and said perch, depth gauge and feeler rod, and a display device for the display of the measurement values of the measurement transducer, said display device equipped with a zeroing control.

4,238,886

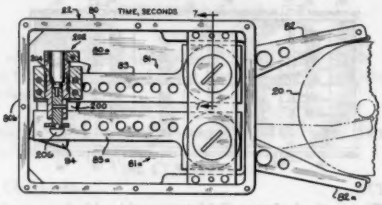
METHOD AND APPARATUS FOR CONTROLLING THE GRINDING OF WORKPIECES

Bernard J. Brown, 1307 Russell Road, Ann Arbor, Mich.

Division of Ser. No. 794,364, May 6, 1977, Pat. No. 4,139,969. This application Aug. 14, 1978, Ser. No. 933,265

Int. Cl.³ G01B *7/12*

U.S. Cl. 33—149 J **8 Claims**



1. A gauge for measuring a workpiece comprising a frame, a pair of caliper assemblies movably mounted on said frame for engaging the surface of a workpiece, means for measuring the relative movement between said caliper assemblies to provide a measurement of the size of said workpiece, at least one of said caliper assemblies including a first arm pivotally mounted for engaging a workpiece, a second arm pivotally mounted for movement within a predetermined range of movement, means interconnecting said first and second arms enabling relative pivotal movement therebetween, and means intermediate said first and second arms at their pivotal connection for releasably maintaining said first and second arms in relatively fixed adjusted positions during the measuring of a workpiece so that the pivotal movement of said first arm is transmitted to said second arm, said releasable maintaining means being operable to enable an initial adjustng movement of said first arm relative to said second arm to a plurality of positions to accommodate a variety of initial sizes of workpieces so that when said first arm is in any of said plurality of positions said second arm remains movable with said predetermined range in response to a measuring movement of said first arm as a selected workpiece is being measured.

4,238,887

QUICK RELEASE BALL BEARING HEIGHT GAUGE

John McLaughlin, 46 Spring St., Brockton, Mass. 02401

Continuation-in-part of Ser. No. 751,398, Dec. 17, 1976, abandoned. This application Sep. 27, 1978, Ser. No. 946,338

Int. Cl.³ G01B *3/18*

U.S. Cl. 33—163 **5 Claims**

1. An adjustable ball bearing release nut in combination with a precise mechanical locating device comprising,

base means

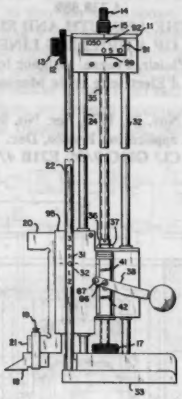
release nut means,

precision threaded screw means for receiving said nut means attached to said base,

location indicating means affixed to said release nut means,

ball bearing holder means within said release nut means,

thread encircling ball bearing means interposed between the screw thread of said theaded screw means, and a corresponding ball bearing holder means within said release nut means,



means for selectively urging said ball bearings of said ball bearing means in and out of screw thread engagement within said release nut means,

means for tightening the ball bearings about said precision threaded screw when in an engaged position.

4,238,888

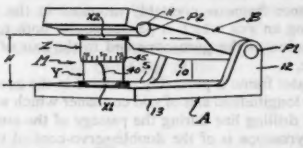
DIRECT READING MICROMETER FOR SINE-BAR ELEVATION

Wesley R. Goldsmith, 3387 Moore Street, Mar Vista, Calif. 90066

Filed Nov. 11, 1976, Ser. No. 740,813

Int. Cl.³ G01B *3/18, 3/30*

U.S. Cl. 33—174 S **22 Claims**



1. The combination of a sine-bar and micrometer for directly reading angular displacements of the sine-bar:

the sine-bar including, a bar supportably engaged by spaced and parallel plugs with one plug carried by and on an axis above a base presenting a surface plane and with the other plug on an axis movably spaced above said plane for height positioning;

the micrometer including, a pair of extensible anvils carried by a barrel and thimble respectively and disposed on a common axis with oppositely disposed anvil faces normal to said common axis and engageable with the said surface plane and second mentioned plug respectively, an extension screw of uniform thread pitch interconnecting the barrel and thimble on said common axis, a circumferentially recurved index line extending axially on the barrel and with axially spaced calibrations in degrees of sine-bar angularity as related to said thread pitch and recurvedly displaced with respect to rotation of the extension screw, and circumferential calibrations in minutes of sine-bar angularity on a skirt of the thimble and rotatable over the barrel to be positioned in reference to said recurved index

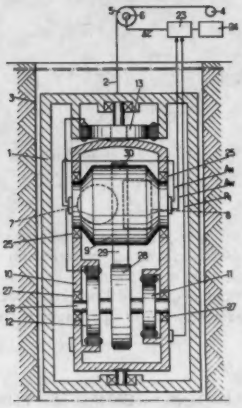
line as related to said thread pitch to establish elevation of the second mentioned plug for sine-bar angularity.

4,238,889

DEVICES FOR THE AZIMUTH AND SLOPE SCANNING OF A DRILLING LINE

Jacques Barriac, Plaisir, France, assignor to Societe d'Applications Generales d'Electricite et de Mecanique Sagem, Paris, France

Filed Nov. 21, 1978, Ser. No. 962,679
Claims priority, application France, Dec. 2, 1977, 77 36334
Int. Cl.[3] G01C 9/06; E21B 47/022
U.S. Cl. 33—304 5 Claims



1. A device for the azimuth and slope scanning of a drilling line, comprising a gyroscope and an accelerometer station disposed in a container suspended from a cable so as to be able to travel through the drilling line to be scanned, an inner frame and an outer frame, characterized by the fact that,

the gyroscope and the accelerometer station are mounted in the inner frame,

the inner frame is pivotably mounted in the outer frame along an axis which is perpendicular both to the axis of rotation of the gyroscope and to the axis of the drilling line,

the outer frame is pivotably mounted in the container along the longitudinal axis of said container which will be that of the drilling line during the passage of the container,

the gyroscope is of the double servo-control type and has two axes of sensitivity (G_1, G_2), i.e. a first axis (G_1) perpendicular to the axis of the drilling line and a second axis (G_2) perpendicular to the first axis (G_1) and oriented so that the plane defined by the axes (G_1) and (G_2) is vertical,

the accelerometer station is of the servo-controlled mass type and has two axes of sensitivity (A_1, A_2), i.e. a first axis (A_1) parallel to the axis of rotation of the gyroscope and a second axis (A_2) parallel to the pivoting axis of the inner frame in relation to the outer frame,

an angular position detector is provided for measuring the angular movements of the inner frame in relation to the outer frame,

a first motor is provided for rotating the inner frame in relation to the outer frame, this first motor being controlled by the stabilization error information delivered by the gyroscope and corresponding to its first axis of sensitivity,

and a second motor is provided for rotating the outer frame in relation to the container, this second motor being controlled by the stabilization error information delivered by the gyroscope and corresponding to its second axis of sensitivity (G_2),

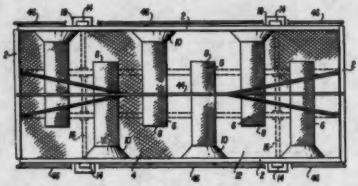
and a precessional circuit internal to the gyroscope is provided for imposing on said gyroscope a precession controlled proportionally to the slope of the axis of rotation of the gyroscope in relation to the horizontal plane so as to maintain this axis of rotation in a horizontal plane, preferably in a North-South orientation.

4,238,890

METHOD AND APPARATUS FOR FIELD-DRYING HARVESTED CROPS

Joel E. Curtis, Chickasha, and Thornton D. Hall, Fort Cobb, both of Okla., assignors to Gold Kist, Inc., Atlanta, Ga.

Division of Ser. No. 2,567, Jan. 11, 1979. This application Aug. 24, 1979, Ser. No. 69,296
Int. Cl.[3] F26B 5/00
U.S. Cl. 34—22 3 Claims



1. The method of open-field drying of freshly harvested field crops, comprising the steps of:

establishing a bulk body of said crops;

providing for the unimpeded flow of air through all exterior boundaries of said body;

establishing a first row of air passages extending inwardly from one side of said body, spaced upwardly from the bottom of said body and terminating at an inner end spaced from the side of said body opposite said one side;

establishing a second row of air passages to extend inwardly from said opposite side of said body, spaced upwardly from said bottom and terminating at an inner end spaced from said one side and establishing the passages of said second row to extend, alternately, between the passages of said first row; and

directing natural currents of ambient air into one of said rows of air passages.

4,238,891

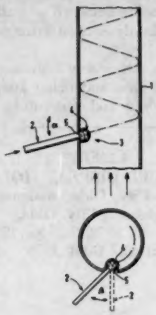
ARRANGEMENT FOR DRYING AND PREHEATING OF COKING COAL

Horst Fach, Essen, and Joachim F. Meckel, Heiligenhaus, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 21,109
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811927
Int. Cl.[3] F26B 17/10
U.S. Cl. 34—57 R 5 Claims

1. An arrangement for drying and preheating coking coal, comprising a transport tube for transporting coal in a stream of carrier gas; a feed conduit for feeding hot gas into said transport tube, said feed conduit being movable relative to said tube

so as to vary the conditions of feeding said hot gas into said transport tube; and a gas permeable ball-and-socket joint



which movably connects said feed conduit with said transport tube.

4,238,892

APPARATUS FOR CLEANING CONTAINERS

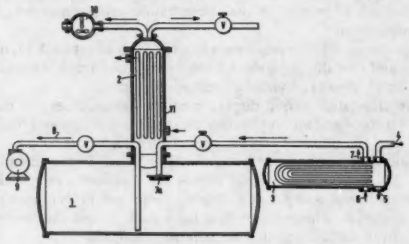
Horst Geiss, Blumenstr. 9, 8871 Unterknoringen, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,235

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1977, 2748830

Int. Cl.³ B08B *9/08*

U.S. Cl. 34—85 **4 Claims**



1. Apparatus for cleaning containers comprising a head assembly engageable with an opening in a container, said head assembly having means for introducing cleaning vapour into the container through said opening, means for removing condensate through said opening from adjacent the bottom of the container, means including a cooler for receiving vapour through said opening from the container, and exhaust fan means connected to said vapour receiving means for extracting vapour from the container through said cooler.

4,238,893

SIGNAL TRANSMISSION IN TEACHING SYSTEM

Michimasa Komatsubara, and Ikuo Shimizu, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

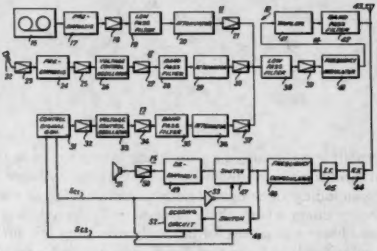
Filed Nov. 3, 1978, Ser. No. 957,348

Claims priority, application Japan, Nov. 8, 1977, 52-133949

Int. Cl.³ G09B *7/077, 19/06*

U.S. Cl. 434—351 **12 Claims**

1. A teaching system comprising a master station including at least one source of main signals in a first frequency band, a source of audio signals, a source of control signals, and signal transmission apparatus comprising means for modulating a subcarrier with said audio signals so as to provide a first auxiliary signal in a frequency band removed from said first frequency band, means for modulating a subcarrier with said control signals so as to provide a second auxiliary signal in a frequency band removed from said first frequency band and said frequency band of the first auxiliary signal, means for multiplexing said main signals and said first and second auxiliary signals so as to provide a composite signal therefrom, means for modulating a carrier of predetermined frequency with said composite signal, and transmitting means for transmitting said carrier modulated with the composite signal; and at least one student station spaced from said master station and at each of which there are situated reception means tunable to said predetermined frequency of said carrier, demodulating



means for obtaining said composite signal from the received modulated carrier, and filter means for separating said main, audio, and control signals from the demodulated composite signal; wherein said control signals from said source include a plurality of command signals each associated with a respective student station to selectively control the operation of the associated respective student station, and each said student station includes control circuitry responsive to its respective command signal so that each said student station is selectively controlled in response to said respective command signal notwithstanding that said control signals are also received by other such student stations.

4,238,894

ARTICLE OF FOOTWEAR WITH A BACKWARD EXTENSION TO THE SOLE

David P. Evans, 32 Gloucester Rd., Almondsbury, Bristol, BS12 4HA, England

Filed Oct. 10, 1978, Ser. No. 949,563

Int. Cl.³ A43B *13/00*

U.S. Cl. 36—25 R **2 Claims**

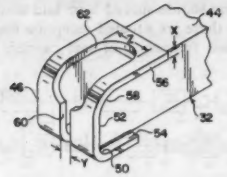
1. An article of footwear as hereinbefore defined, including a ground-engaging sole and an upper part carried by the sole which are adapted for the article to be worn by a wearer of a certain shoe size, in which article of footwear, an integral portion of the sole extends backwards at least one inch behind the plane which is the coronal plane containing the posterior aspect of the heel of the wearer when the article is worn by a wearer of the shoe size for which the article is adapted, the article of footwear being such that such a wearer, when wearing it, can lean backwards so that the coronal plane containing the centre of gravity of the wearer is between the coronal plane containing the posterior aspect of the heel of the wearer and the coronal plane containing the posterior point of contact of the said portion with the ground, without the wearer tipping over.

4,238,895

LIFT ARM WITH IMPROVED CHAIN CONNECTOR

Vernon L. Hetrick, Fairview Park, Ohio, assignor to Meyer Products, Inc., Cleveland, Ohio

Filed Apr. 16, 1979, Ser. No. 30,283
Int. Cl.[3] E01H 5/00
U.S. Cl. 37—41 3 Claims



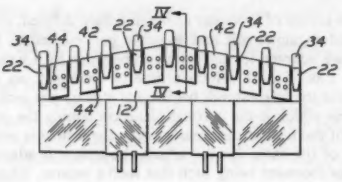
1. In a lift arm for raising a plow blade from a roadway when said lift arm is pivoted upwardly by a hydraulic cylinder, said lift arm including an elongated body portion having an end for receiving a chain which chain extends in a selected direction from said blade and means for pivotally mounting said lift arm about an axis spaced from said chain receiving end, said chain to be used with said lift arm including a series of interconnected links each having a known length, a known thickness and a known width, and a chain receiving member secured to said chain receiving end, an improvement comprising: said chain receiving member having an upwardly facing generally concave chain engaging surface extending in a selected arcuate path in a generally vertical direction, said concave surface facing generally in a direction aligned with said selected direction of said chain, a slot extending through a portion of said concave surface in a direction generally parallel to said selected arcuate path, said slot having a width slightly greater than the thickness of said link, whereby one link of said chain can be restrained in said slot by said concave surface and remains generally perpendicular to said concave surface regardless of the relative positions of said chain and said concave surface, an opening in said elongated body portion between said chain receiving member and said means for pivotally mounting said lift arm, said opening having a width slightly greater than the width of said link, whereby said chain extends through said opening downwardly from said lift arm when the link is restrained in said slot.

4,238,896

CUTTING EDGE ASSEMBLY FOR A LOADER BUCKET

William E. Lanz, Joliet, and Visvaldis A. Stepe, Willow Springs, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 846,004, Oct. 27, 1977, abandoned.
This application Aug. 24, 1979, Ser. No. 69,426
Int. Cl.[3] E02F 9/28
U.S. Cl. 37—141 R 5 Claims



1. A cutting edge assembly for an earthmoving machine, comprising:

(a) a base;

(b) a plurality of separate tooth adapters being spaced apart along said base;

(c) first means for fastening each of said adapters to said base;

(d) a plurality of separate cutting edges, each of said cutting edges being in position between two adjacent said adapters and being laterally spaced from said two adjacent adapters; and

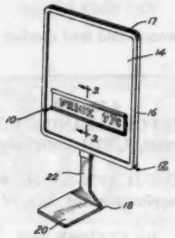
(e) second means for removably fastening each of said cutting edges to said base and being adapted for coupling only through said base and said cutting edges.

4,238,897

TWO FACED DISPLAY HOLDER

Thomas L. Byers, Del City, Okla., assignor to Central Sales Promotions, Inc., Oklahoma City, Okla.

Filed Mar. 30, 1978, Ser. No. 891,523
Int. Cl.[3] G09F 3/18
U.S. Cl. 40—16.2 9 Claims



1. Apparatus for presenting two, opposed displays, utilized with two objects of visual observation and comprising, in combination:

an elongated first display member having a first back surface and first display means for receiving and retaining one of said objects of visual observation; and

an elongated second display member having a second back surface and second display means for receiving and retaining the other of said objects of visual observation;

said first display member and said second display member co-operating to define means for releasably connecting said first and second display members in a connected position wherein said first back surface and said second back surface are substantially adjacent; and

said connecting means including an elongated, L-shaped first connector portion and an elongated second connector portion integrally formed on said first display member and an elongated, L-shaped first mating connector portion and an elongated second mating connector portion integrally formed on said second display member, said first mating connector portion substantially identical to said first connector portion and said second mating connector portion substantially identical to said second connector portion, said first connector portion including a flexible first post section and an arm section, said first post section projecting outwardly from said first back surface, having an outer end and a first post section width in the plane of the first back surface, said arm section angled substantially perpendicularly from said outer end and having an arm section width in the plane of the first back surface, said second connector portion including a second flexible post section, said second flexible post section projecting outwardly from said first back surface at a distance in the plane of said first back surface from said first post section substantially equal to said arm section width and a distance from the arm section substantially equal to said first post section width, said first mating connector portion including a first flexible mating post section and a mating arm section, said mating post section projecting outwardly from said first back surface, having an outer end and a mating post section width in the plane of the second back surface substan-

tially equal to said first post section width, said mating arm section angled substantially perpendicularly from said outer end of said mating post section and having a mating arm section width in the plane of the second back surface substantially equal to the arm section width of the arm section, and said second mating connector portion including a second flexible mating post section, said second mating post section projecting outwardly from said second back surface at a distance in the plane of said second back surface from said first mating post section substantially equal to said mating arm section width and a distance from the mating arm section substantially equal to said first mating post section width, said arm section and said mating arm section interacting for retaining said mating connector portion between said first connector portion and said second connector portion when said first display member and said second display member are in said connected position.

4,238,898

PICTURE VIEWER

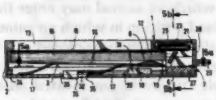
Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

Filed Sep. 18, 1978, Ser. No. 943,365

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742346

Int. Cl.³ G09F 11/30

U.S. Cl. 40—513 20 Claims



1. A picture viewer for a pile of pictures, comprising

enclosure means including a frame defining a viewing window and a slider reciprocably mounted on the frame, the frame and slider having relative obverse and reverse sliding movements in opposite directions along the window, the enclosure means also defining a picture compartment to contain the pile of pictures and having first and second ends, one end of the compartment being adjacent the window through which a picture at one end of the pile is displayed,

a picture changing mechanism adjacent the picture compartment and presenting a displayed picture to the window, the picture changing mechanism moving the displayed picture away from the window and into the pile and removing a new picture off one end of the pile and moving the new picture to the window for display in response to such relative observe and reverse movement of the frame and slider,

said picture changing mechanism including a pile transporter, and an individual picture transporter on the frame and movable therewith, the pile transporter being disposed at one side of the compartment to engage one side of the pile of pictures, the individual picture transporter being disposed at a first end of the compartment to engage an individual picture at the corresponding end of the pile of pictures, spring means at the second end of the compartment and urging the pile of pictures toward said individual picture transporter,

the individual picture transporter having a rotary driver with a retentive driving surface confronting the end of the compartment to engage the face of the individual picture at the end of the pile, and

driving means connected with the rotary driver and the slider and rotating said driver in response to sliding movement of the slider relative to the frame.

4,238,899

PICTURE VIEWER

Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

Filed Sep. 18, 1978, Ser. No. 943,364

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742345

Int. Cl.³ G09F 11/30

U.S. Cl. 40—513 26 Claims

1. A picture viewer for a pile of pictures, comprising

enclosure means including a frame defining a viewing window and a slider reciprocably mounted on the frame, the frame and slider having relative obverse and reverse sliding movements in opposite directions along the window, the enclosure means also defining a picture compartment having one end adjacent the window to contain a pile of pictures with a picture at one end disposed at said one end of the compartment and adjacent the window,

a picture changing mechanism adjacent the picture compartment and presenting a displayed picture to the window, the picture changing mechanism moving the displayed picture away from the window and into the pile and removing a new picture off one end of the pile and moving the new picture to the window for display in response to such obverse and reverse movement of the frame and slider,

said picture changing mechanism including a pile transporter and an individual picture transporter, one of the transporters being connected with the frame and movable therewith and the other of the transporters being connected with the slider and movable therewith, the pile transporter being disposed at one side of the compartment to engage one side of the pile of pictures, the picture transporter being disposed at one end of the compartment to engage an individual picture at the corresponding end of the pile of pictures, the transporters producing relative movement of the pile of pictures and of the individual picture for presenting the individual picture at the window for display, and

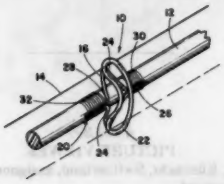
the picture changing mechanism also including support elements on the enclosure means and adjacent the window supporting the picture being displayed, and operating means connected with the support elements and moving the support elements out of supporting relation to the displayed picture to release the displayed picture and make provision to support an individual picture removed by the transporter from the pile and then reinserted.

4,238,900

FISHING POLE EYE

Leroy G. Cunningham, 1515 S. 118 E. Ave., Tulsa, Okla. 74138

Filed Dec. 4, 1978, Ser. No. 965,987
The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.
Int. Cl.³ A01K *87/04*
U.S. Cl. 43—24 5 Claims



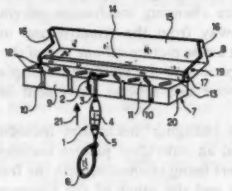
1. An eye for a fishing pole having a fishing line and comprising attachment means engagable with the outer periphery of the pole for securing the eye thereto, and elongated arcuate loop means carried by the attachment means, said loop means including an arcuate opening having an internal length sufficiently long to surround slightly more than one half the circumferential distance around the outer periphery of the pole for receiving the fishing line therethrough, one end of said opening being of a substantially semi-circular configuration, the opposite end of said opening being of a substantially semi-circular configuration, and the center line of each of said ends being in alignment with each other and in alignment with the center of the pole.

4,238,901

SPINNER-CASE

Rene' Martinet, 51, rue Jean Richepin, 76620 Le Havre, France, and Luc Meinerad, 161, rue Victor Hugo, 76600 Le Havre, France

Filed Mar. 14, 1979, Ser. No. 20,499
Claims priority, application France, Nov. 17, 1978, 78 32552
Int. Cl.³ A01K *97/06*
U.S. Cl. 43—57.5 R 13 Claims



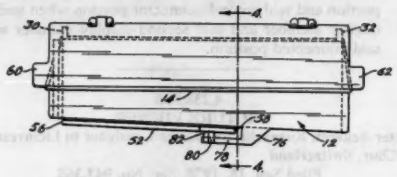
1. A case for tidying fishing spinners, which comprises a body having at least a peripheral surface and at least a wall member adjacent and substantially perpendicular to said peripheral surface, said peripheral surface being provided with a series of parallel recesses each extending in a direction substantially perpendicular to said wall member for receiving the shank of the hook of a spinner, said wall member being formed adjacent each said recess with a pair of holes for receiving two adjacent arms of the hook of a spinner, said holes of each of said pair of holes being substantially centered on axes which cross adjacent each said recess, said axes being angularly spaced at about 120° with respect to each other, said recess consisting in a substantially cylindrical groove formed in said peripheral surface, and a cover member hingedly mounted on said body, said cover member comprising two mutually perpendicular walls defining a back portion and a flange portion and being movable with respect to said body towards at least a position relative to said body wherein said back portion of said cover member extends substantially parallel to and separated from said wall member and said flange portion of said cover member extends substantially parallel to said peripheral surface, at a distance therefrom in the direction opposite to said wall member.

4,238,902

ANIMAL TRAP

Gordon D. Holl, Kenas Rd., North Wales, Pa. 19454, and Gene A. Marcolina, 8803 Cheltenham Ave., Wyndmoor, Pa. 19118

Filed Apr. 19, 1979, Ser. No. 31,510
Int. Cl.³ A01M *23/18*
U.S. Cl. 43—61 12 Claims



1. An animal trap comprising:

an elongated box having an opening extending substantially the full length of said box in the direction of elongation;

means providing a closure of a size sufficient to close said opening substantially completely;

hinge means connecting said box and said enclosure and arranged to allow said closure to swing from an open position in which an animal may enter the interior of said box to a closed position in which an animal within the box is substantially completely enclosed;

means for urging said closure toward said closed position;

animal-actuable trigger means located adjacent one end of the box for temporarily holding said closure in said open position against the action of said urging means, said trigger means being movable, when activated by an animal, to permit said closure to move to its closed position under the action of said urging means; and

shield means secured to said trap for denying access to said trigger means to the animal except when the body of the animal is positioned so that, upon activation of the trigger, said closure is able to close under the action of said urging means and thereby enclose the animal within the enclosure;

in which said elongated box comprises five sides with four sides extending substantially in the same direction from a fifth side, said four sides comprising two opposite short sides and two opposite long sides, and said opening being located opposite the fifth side and defined by the free edges of said four sides, and in which said shield means comprises a shield member connected to and extending from one of said long sides in the direction away from the fifth side and extending longitudinally from a location adjacent said trigger means to an intermediate location between said short sides.

4,238,903

ANIMAL TRAP

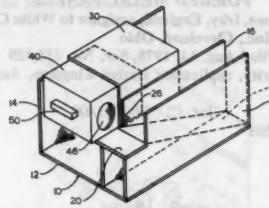
Louis J. Mazzei, 1408 E. Fountain Way, Fresno, Calif. 93704

Filed May 29, 1979, Ser. No. 43,447
Int. Cl.³ A01M *23/20*
U.S. Cl. 43—61 2 Claims

1. An animal trap comprising:

a trap receptacle having an entry opening, and including a slide-in entry box, a trap box, said slide-in entry box and being slidable into said trap box, whereby when an animal

to be trapped enters said said entry opening in said trap receptacle, said trap receptacle becomes unbalanced and shifts to a vertical upstanding position, causing the slide-in entry box to slide into the trap box;



a base including a pair of vertically upstanding side members; and,

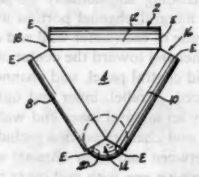
pivot means on said pair of vertially upstanding side members for balancing said trap receptacle in a substantially horizontal position.

4,238,904

TOY DISPLAYING ERRATIC TUMBLING MOVEMENT

Dorothy M. Lang, 181 Dunk Rock Rd., Guilford, Conn. 06437

Filed Jun. 4, 1979, Ser. No. 44,843
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—1 R **3 Claims**



1. An erratic movement toy comprising:

(a) a hollow housing, said housing including:

(i) two major triangular planar surfaces which are spaced apart from and generally parallel to each other;

(ii) convexly curved side walls interconnecting corresponding edges of said triangular planar surfaces;

(iii) said housing having open corner portions between adjacent ones of said side walls; and

(b) a spherical body confined within the interior of said housing and freely movable therein, said spherical body providing means for causing said housing to tumble from one of said triangular planar surfaces to the other when said housing is disposed on an inclined supporting surface, and said open corner portions of said housing being sized to allow said spherical body to protrude through said open corner portions to provide a relatively smooth curved surface extending between corresponding corners of said triangular planar surfaces.

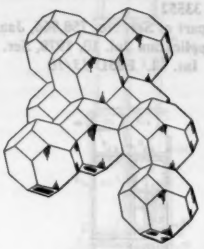
4,238,905

SCULPTURAL OBJECTS

Richard MacGraw, II, 600 W. 113th St., New York, N.Y. 10025

Continuation-in-part of Ser. No. 673,140, Apr. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 164,588, Jul. 21, 1971, abandoned. This application Aug. 17, 1978, Ser. No. 934,531
Int. Cl.³ A63H *33/06, 33/26*
U.S. Cl. 46—25 **4 Claims**

1. Sculptural objects comprising a plurality of identical geometric solid units each having a plurality of faces of at least two different polygonal shapes and collectively capable of random assembly into close packing spatial arrangements wherein there are no overlapping edges or interstices between abutting units, the mutually opposed similarly configured faces of each unit respectively having first and second magnet means of fixed oppositely oriented magnetic polarity, the magnetic poles of said first magnet means of one unit and the magnetic poles of the second magnet means of another unit being thus cooperable magnetically in selected pairs to join said units together in a predetermined manner and in a close packing arrangement, each said unit being a truncated regular octahedron and said magnet means being bar magnets one located at



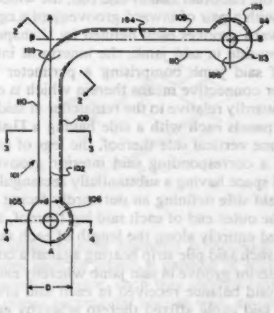
each polyhedron face, said bar magnets in the polar square polygonal faces having their north and south poles oriented along a circumferential line dividing pairs of opposite sides of said polar square faces, the magnets located in the equatorial square faces having their north and south poles oriented along a line bisecting pairs of opposite angles of said equatorial square faces in a circumferential direction and the magnets located in the hexagonal faces having their north and south poles oriented along lines bisecting pairs of opposite angles of said hexagonal faces and passing through points lying in a circumferential direction parallel to latitudinal circles.

4,238,906

FLYING TOY

Joseph Bradford, Sr., 11145 Cypress Glenn, Baton Rouge, La. 70807

Filed Sep. 25, 1978, Ser. No. 923,041
Int. Cl.³ A63H *27/00*; A63B *65/08*
U.S. Cl. 46—74 D **5 Claims**



1. In a flying device of the boomerang type having two airfoil arms disposed in a horizontal plane and extending from a center portion along respective horizontal axes which intersect at an angle of at least ninety degrees, the improvement wherein each arm carries at its outer end an annular-shaped stabilizer having:

concentric inner and outer peripheries which are disposed

essentially in the same horizontal plane, the inner periphery defining a center opening through the stabilizer;

an annular bottom surface extending between the inner and outer peripheries of the stabilizer; and

a convex annular top surface extending between the inner and outer peripheries of the stabilizer, wherein the convex annular top surface is relatively more convex in shape than the annular bottom surface.

4,238,907

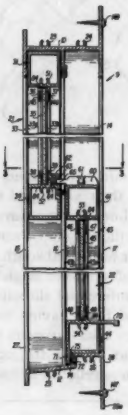
SHALLOW DOUBLE HUNG WINDOW

Charles A. Swan, P.O. Box 10 Dory Dr., Gulf Harbors, New Port Richey, Fla. 33552

Continuation-in-part of Ser. No. 758,866, Jan. 12, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,344

Int. Cl.³ E05D *13/10*

U.S. Cl. 49—446 **6 Claims**



1. A pair of block and tackle sash balances in combination with a double hung window not greater than substantially two inches in over-all thickness, each balance comprising a rod having a U-shaped cross-section, a tension spring extending within said rod connected to one end thereof, a block and tackle mechanism within said rod connected to the other end of said spring, a cable of said block and tackle mechanism extending from the other end of said rod, the window comprising a jamb with a pair of inward grooves and a corresponding pair of outward grooves each defined by U-shaped sides provided side-by-side in said jamb, the innermost interior facing said side of said jamb comprising a perimeter part having apertures for connective means therein which is coplanar and extends outwardly relative to the remainder of said jamb, a pair of window panels each with a stile having a U-shaped cross-section on one vertical side thereof, the legs of each said stile received in a corresponding said interior groove defining a longitudinal space having a substantially rectangular cross-section, each said stile defining an outwardly facing longitudinal groove at the outer end of each said leg thereof, a pile sealing strip received entirely along the length of each said longitudinal groove, such said pile strip bearing against a corresponding side of an interior groove in said jamb whereby each said space is sealed, a said balance received in each said inward groove and having said cable affixed thereto whereby each said balance is urged upwardly, a headpiece attached to the top of each said stile, a stop member mounted on the top of each said rod, said stop member having an inclined surface adapted to cooperate with a mating inclined surface provided on said headpiece whereby the urging of said stop member against said headpiece urges said window panel in a lateral direction away from the corresponding said inward groove, said window being for installation on an existing framework of a porch or room wherein said frame work consists essentially of beams having a thickness of substantially two inches.

4,238,908

FORMED METAL PANELS

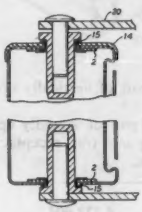
Donald A. Bunce, Irby, England, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Aug. 14, 1978, Ser. No. 933,429

Claims priority, application United Kingdom, Aug. 16, 1977, 34383/77

Int. Cl.³ E06B *3/00*

U.S. Cl. 49—501 **1 Claim**



1. A rectangular refrigerator door panel formed from a single sheet of sheet material, comprising a central panel of rectangular shape, an integral outer wall on each side of said central panel joined at its inner side to said central panel at a first fold and extending substantially perpendicular to said central panel, an integral channel portion joined at a second fold to the outer side of each outer wall and extending around all sides of the panel and toward the center of the panel generally parallel to said central panel, said channel portion including a pair of spaced, parallel, inner and outer channel walls joined together by an integral inner end wall away from said panel outer wall, said channel portion including an outer end wall extending between said inner channel wall and said second fold and defining a gap with said outer channel wall, said outer end wall having a re-entrant portion adjacent said inner channel wall, a resilient gasket carried in said channel portion and extending outwardly from said gap over said outer channel wall, said gasket having a portion extending into said re-entrant portion to retain said gasket in place within said channel portion, said panel having one outer wall which at both end intersections with adjacent other outer walls has a tab bent at a right angle to underlie a portion of the adjacent outer wall, and a hollow rivet at each end extending through the adjacent tab and other outer wall to define a hinge axis and serve as bearings for opposed hinge pintles.

4,238,909

METAL DOOR FRAME ASSEMBLY

John Mutton, Northfield, Australia, assignor to Rollform Pty. Ltd., Northfield, Australia

Filed Mar. 8, 1979, Ser. No. 18,664

Claims priority, application Australia, Mar. 10, 1978, PD3682

Int. Cl.³ E06B *1/04*

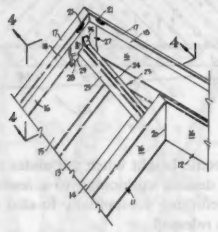
U.S. Cl. 49—504 **7 Claims**

1. In a metal door frame comprising two jambs and a lintel, all of the same cross-sectional shape, which said shape includes a central striker portion flanked on its two sides by an inner web and an outer web respectively, each web having a respective end flange which itself terminates in an inturned flange, each inturned flange terminating in a return flange, and mitre joints between the jambs and lintel, each mitre joint comprising:

a mitre edge on the jamb and a mitre edge on the lintel contiguous therewith,

aperture edges defining tab apertures in the return flanges of both the jamb and lintel,

a bridging strip extending between the facing surfaces of the end flanges, and having wings which respectively bear against the web inner surfaces of the jamb and lintel adjacent the mitre edges, and



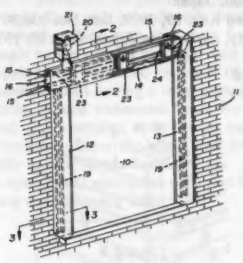
a pair of locking plates each having a pair of tabs which engage the aperture edges of respective said tab apertures in the jamb and lintel, each said locking plate also bearing against the bridging strip.

4,238,910

MOUNTING FOR INFLATABLE DOCK SEAL

Larry O'Neal, 4953 Timbercrest Dr., Canfield, Ohio 44406

Filed Mar. 16, 1979, Ser. No. 21,028
Int. Cl.[3] E04B *1/34*
U.S. Cl. 52—2 **3 Claims**



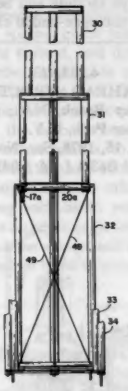
1. An inflatable dock seal and mounting therefor for positioning said dock seal on a wall above and beside a dock opening therein and comprising at least one inflatable member arranged in an inverted U-shape and having an upper horizontal section and a pair of spaced vertical sections, flexible non-inflatable longitudinally positioned channel-like fastening members on the exterior of each of said sections, said fastening members each being integral and U-shaped with the open side facing toward a corresponding section of said inflatable member and having out-turned flanges thereon, said flanges being continuously attached to said corresponding section of said inflatable member, rigid elongated structural members slidably positioned in each of said fastening members, a plurality of threaded bolt-like members positioned in said wall adjacent said dock opening and arranged for detachable engagement in a plurality of openings formed in said elongated structural members, butterfly nuts disposed on said bolt-like members and wherein said openings in said structural members are shaped to register with said butterfly nuts when in one position on said bolt-like members and means for inflating said inflatable member.

4,238,911

TELESCOPING COLUMNS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and John T. Mazur, Sebastian, Fla.

Filed Sep. 29, 1978, Ser. No. 946,991
Int. Cl.[3] E04H *12/18*
U.S. Cl. 52—111 **9 Claims**



1. A telescoping column, having a base end and a tip end, comprising:

an outermost, an innermost, and at least one intermediate rigid structural sections nested within one another;

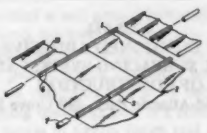
said outermost section and each of said at least one intermediate sections including a plurality of screws extending longitudinally therealong and rotatably attached thereto, said plurality of screws threadingly engaging an adjacent structural section and further including rotating means to selectively rotate said plurality of screws of said outermost and each of said at least one intermediate sections.

4,238,912

ROOFING SYSTEMS

Robert W. G. MacDonald, Templestowe, Australia, assignor to Solar Thermal Consultants Pty. Limited, Canberra, Australia

Filed Mar. 27, 1978, Ser. No. 890,905
Int. Cl.[3] E04H *14/00*
U.S. Cl. 52—173 R **1 Claim**



1. A modular roofing assembly comprising: a plurality of tray modules each of which is capable of accommodating at least one solar collector, each tray module being formed of a generally planar rectangular bottom wall, an upstanding transverse continuous side wall extending along each of the two opposite transverse side edges of the bottom wall, and a continuous substantially U-shaped hooking flange extending along each of the two opposite longitudinal side edges of the bottom wall, one of the hooking flanges having a lower free arm disposed below and parallel to its respective side edge and the other hooking flange having an upper free arm disposed above and parallel to its respective side edge, the upper free arm of

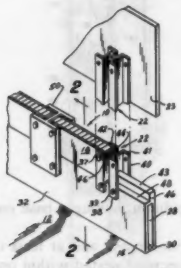
one module being hooked to the lower free arm of an adjoining module; the upper edge of each of said upstanding transverse walls terminating in a substantially U-shaped flange having a free arm extending downwardly within the confines of the respective module; and a clip connecting the side wall of one module to the side wall of an adjoining module, the clip having an open-ended channel receiving the top edge portions of the adjoining side walls and their respective U-shaped flanges, the free arnm of each adjoining flange being biased outwardly relative to its respective module and being restrained by the opposing side walls of the open-ended channel within the clip.

4,238,913

BULKHEAD STRUCTURE

Ronald Holmes, Stoney Brook, N.Y., assignor to Advanced Structures Corp., Deer Park, N.Y.

Filed Sep. 15, 1978, Ser. No. 942,483
Int. Cl.³ B63B *3/56*; E04B *2/00*
U.S. Cl. 52—238 **8 Claims**



1. A bulkhead structure for partitioning a ship deck comprising a bulkhead panel means being constituted of a first metal comprising aluminum, a base member comprising a U-shaped channel constituted of a second metal comprising steel permanently affixed to said deck for receiving said panel means adjacent the deck surface, corrosion prevention means comprising a polymeric material disposed between said panel means and said base member to prevent contact of said first and second metals, and further characterized in that said panel means comprises a lower panel having a first end affixedly received in said base member, and an upper panel of honeycombed construction and further comprising means to disconnectably interconnect said upper and lower panels, so that said upper panel can be removed with said lower panel remaining in said channel.

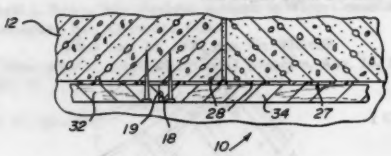
4,238,914

RESILIENTLY CUSHIONED ADHESIVE-APPLIED REBOUND WALL SURFACING SYSTEM AND METHOD OF CONSTRUCTION

Ray E. Omholt, Mid-Atlantic Park, 590 Grove Rd., Thorofare, N.J. 08086

Continuation-in-part of Ser. No. 339,496, Mar. 8, 1973, Pat. No. 3,893,275. This application Jul. 7, 1975, Ser. No. 593,608
Int. Cl.³ E04B *2/00*
U.S. Cl. 52—309.3 **13 Claims**

8. A resiliently cushioned rebound wall surfacing system to be secured to a substantially continuous vertical receiving surface comprising a plurality of wall members secured to said receiving surface, the outer surfaces of said wall members lying in a substantially vertical plane, an elastomeric trowelable non-shrinking material which is adhesive and cohesive when cured located between said wall members and said receiving surface, said material being applied in its uncured state to at least one of the rear faces of said wall members and said receiving surface, said material having a thickened consistency so that said material is trowelable when applied, said uncured material being displaced upon the application of force on a wall member against the receiving surface such that said wall member is spaced from said receiving surface a predetermined distance by said material, said elastomeric material in its cured



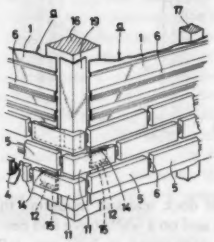
state having a specific height when not under load, and being deformable with desired cushioning to a lesser height when under load and returning substantially to said original height when said load is released.

4,238,915

TILE SETTING ASSEMBLY, TILE WALL AND METHOD FOR BUILDING A TILE WALL

Yoshio Yoshida, No. 1 Ohodori 9-chome, and Takeshi Tanizaki, No. 1 Kitashichijyo Nishi 16-chome, both of Chuoh-ku, Sapporo, Hokkaido, Japan

Filed Aug. 29, 1978, Ser. No. 938,307
Claims priority, application Japan, Dec. 15, 1977, 52/149959
Int. Cl.² E04B *1/38*
U.S. Cl. 52—510 **7 Claims**



1. A tile setting assembly for buildings having horizontally spaced pillars, comprising:

(a) at least one panel which spans at least two pillars of the building, said panel having a plurality of equally spaced and parallel position indexing projections extending the entire length of said panel horizontally along one surface thereof;

(b) first tiles having first mating engaging means;

(c) second tiles having second mating engaging means;

(d) first tile holding members secured to said panel, said first tile holding members abutting against said projections and each having first engaging means for holding said first tiles by first engaging means; and

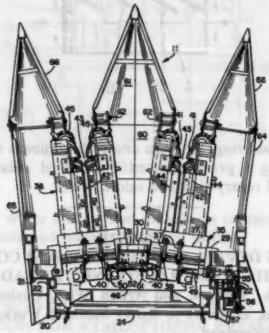
(e) second tile holding members secured to said panel, said second tile holding members abutting against said projections and each having second engaging means for holding said second tiles by second mating engaging means.

4,238,916

CORN SNAPPING HEADER FRAME

Elmer M. Kesl, Downers Grove; Henry H. Quade, Palos Heights, and Peter Sammarco, Downers Grove, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 6, 1979, Ser. No. 64,145
Int. Cl.³ A01D *45/02, 45/00*
U.S. Cl. 56—106 **6 Claims**



1. A two row corn snapping header for use in combination with a forage harvester comprising:

a main frame including beam extending at right angles to the path of travel of said harvester across both rows;

left and right transverse beam assemblies, each of said assemblies having a first end pivotally mounted on said main frame beam for swinging about a generally vertical axis and a second end attachable to said frame beam in one of a plurality of positions, the portion of said beam assembly between said first and second ends being a transverse beam forwardly offset from said main frame beam at an obtuse angle to the path of travel of said harvester;

a corn snapping unit mounted on each of said transverse beam assemblies and having a crop passage disposed perpendicularly of said transverse beam for receiving corn stalks, said corn snapping units having means for removing the corn ears from the stalks and for moving them rearwardly to said forage harvester,

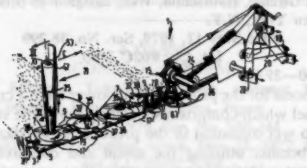
and means operatively associated with said forage harvester for driving said snapping units.

4,238,917

MOWING DEVICE

Pieter A. Oosterling, and Hendricus C. Van Staveren, both of Nieuw-Vennep, Netherlands, assignors to Vicon N.V., Nieuw-Vennep, Netherlands

Continuation of Ser. No. 870,208, Jan. 17, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,679
Claims priority, application Netherlands, Jan. 19, 1977, 7700541; Nov. 7, 1977, 7712265
Int. Cl.³ A01D *57/20*
U.S. Cl. 56—192 **19 Claims**



1. A mowing device comprising, in combination:

a horizontally elongate carrier and mounting means for attaching the carrier to a vehicle such that the carrier may be moved over the field in the direction of movement while extending transversely of the direction of such movement;

cutting means carried by said carrier for cutting at least one crop swath having a width greater than the width of a desired windrow; and

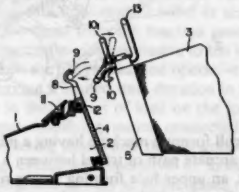
crop deflecting means connected to said carrier for conforming said one swath to the desired windrow width, said crop deflecting means comprising at least one endless flexible member, spaced guide means about which said endless member is trained, and drive means for driving said endless member, said guide means comprising first and second elements, the first element being disposed adjacent said carrier and being rotatable about a generally upright axis and the second element being disposed in trailing, laterally offset relation to said first element and being rotatable about an axis substantially parallel with said generally upright axis, the offset relation of said second element being such as to position a flight of said endless member at an acute angle with the longitudinal axis of said carrier, and the axes of said elements during operation being disposed in fixed relation with respect to each other.

4,238,918

DEVICE FOR FIXING A GRASS COLLECTING BAG ONTO A ROTARY TYPE LAWN MOWING MACHINE

Kazuo Saruhashi, Kamifukuoka, and Takeo Ogano, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 14,863
Claims priority, application Japan, Mar. 7, 1978, 53-29013
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—202 **1 Claim**



1. A device for tightly fastening a grass collecting bag on a rotary type lawn mowing machine, comprising:

(a) a machine body having a grass clipping discharge port at one end thereof;

(b) a lid provided at said grass clipping discharge port of said lawn mowing machine in a pivotally oscillatable manner and being constantly biased toward its closing direction to close said grass clipping discharge port;

(c) a cut grass collecting bag to be butt-connected to said grass clipping discharge port in a communicative manner;

(d) locking means to tightly fasten said grass collecting bag with said machine body at said grass clipping discharge port, said locking means being provided on the top part of both said lid and grass collecting bag, and comprising a lever integrally formed with, and extending upward from, said swingable lid at the top surface part of said grass clipping discharge port, and a projected portion being an integral part of a carrying handle for said grass collecting bag and to be engaged with said lever, said carrying handle and said projected portion integral therewith being in a substantially rectangular form, and said lid swinging upwardly inward of said grass collecting bag when said locking means are engaged to communicate said said grass clipping discharge port and said glass collecting bag; and

(e) hook means comprising a hook bracket having a hook

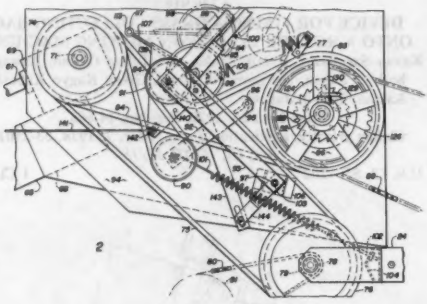
receiving hole therein, the bracket and hole defining boundary thereof constituting an engagement hole, fixedly secured on one top surface part of the mouth frame of the grass collecting bag and which is constantly biased toward the engaging direction with said engagement hole, an operating lever to directly oscillate said hook around a shaft when joining said grass collecting bag to said machine body, said hook means being positioned in the rectangular region defined by said carrying handle and projected portion so as to enable said operating lever for the hook to be readily gripped together with said handle when the grass collecting bag is fastened with, or removed from, said grass clipping discharge port, and a hanger to hang and hold the rear end part of said grass collecting bag to avoid unexpected removal thereof from said machine body.

4,238,919

AUTOMATIC BALE EJECTION DRIVE OVERRIDE MEANS

Charles A. Parrish, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Mar. 29, 1979, Ser. No. 25,171
Int. Cl.³ A01F *15/00*
U.S. Cl. 56—341 **14 Claims**



1. In a crop roll forming machine having a pickup, a tailgate movable in an arcuate path of travel between a first point and a second point, an upper bale forming means reversibly movable in a first direction and an opposing second direction, a lower bale forming means movable in at least a first direction of travel, the upper and lower bale forming means generally defining therebetween a roll forming region, and drive means connectable to the upper and lower bale forming means effective to automatically reverse the movement of the upper bale forming means when the tailgate is elevated beyond a predetermined point in its arcuate path of travel and to stop the travel of the lower bale forming means, the improvement comprising:

selectively actuatable control means cooperative with the drive means such that when activated the movement of the upper bale forming means continues to move in the first direction and the lower bale forming means continues to travel in the first direction to eject a partially formed crop roll from the roll forming region.

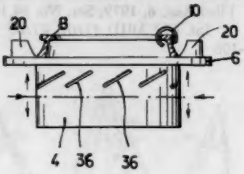
4,238,920

DEVICE FOR REVOLVING-RING SPINNING

Jacques Le Chatelier, Riedisheim, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, France

Filed Apr. 26, 1979, Ser. No. 33,422
Claims priority, application France, May 9, 1978, 78 13619
Int. Cl.³ D01H *7/56*
U.S. Cl. 57—124 **8 Claims**

1. A spinning or twisting device comprising an annular support, a rotary ring, a fluid bearing arranged on said annular support for supporting said rotary ring for rotation, and a traveler slidably engaged on said rotary ring and effecting



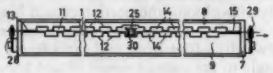
rotation of said ring, wherein controlling means are provided for obtaining a predetermined differential rotational speed between said rotary ring and said traveler.

4,238,921

COOLING DEVICE AND METHOD FOR COOLING A HEATED TRAVELLING THREAD

Arnold Steck, Wattwil, and Armin Wirz, Ossingen, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Apr. 18, 1979, Ser. No. 31,305
Claims priority, application Switzerland, Apr. 19, 1978, 4183/78
Int. Cl.³ D01H *7/46, 13/26*
U.S. Cl. 57—284 **23 Claims**



14. In combination with a texturing machine having a heating device for heating a travelling thread and a false twist spindle for imparting a false twist to the thread; a cooling device between said heating device and said false twist spindle for cooling the thread, said cooling device having a duct defining a thread path between a thread entry opening and a thread outlet opening and having a plurality of chambers disposed in mutually offset relation along said path, said chambers being arranged whereby a cooling medium entering said duct is repeatedly deflected in a zig-zag manner along said path under a vigorous vortex formation.

4,238,922

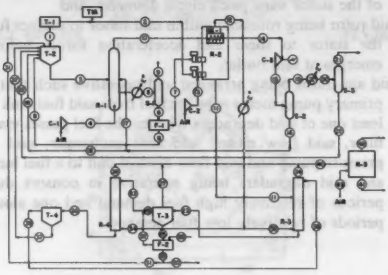
PROCESS FOR THE PRODUCTION OF POWER FROM CRUDE FUELS CONTAINING HIGH CONCENTRATIONS OF SULFUR

Wayne B. Gitchel, Rothschild, Wis., assignor to Sterling Drug Inc., New York, N.Y.

Filed May 11, 1979, Ser. No. 38,299
Int. Cl.³ F02C *7/00*
U.S. Cl. 60—39.05 **11 Claims**

1. A process for the production of power from a crude sulfur bearing fuel which comprises subjecting the crude sulfur bearing fuel to wet oxidation in the presence of an alkaline earth metal carbonate, utilizing the steam and compressed gases from the wet oxidation in power production, separating insoluble ash and sulfate salt from the wet oxidation reactor blowdown, mixing the ash and sulfate salt with a portion of the same or a different fuel, reacting the mixture at a high temperature

under reducing conditions to produce the corresponding alkaline earth metal sulfide, and treating the alkaline earth metal



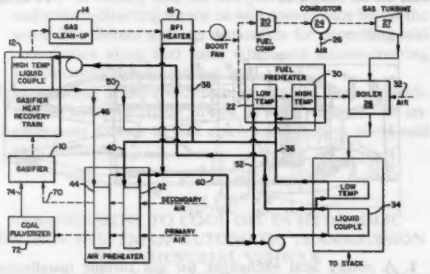
sulfide with water and carbon dioxide to regenerate alkaline earth carbonate and release hydrogen sulfide.

4,238,923

METHOD OF LOW TEMPERATURE HEAT UTILIZATION FOR ATMOSPHERIC PRESSURE COAL GASIFICATION

Richard E. Waryasz, Chicopee, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 22, 1979, Ser. No. 51,330
Int. Cl.[3] F02B *43/08*; F02C *6/18*
U.S. Cl. 60—39.12 **3 Claims**



1. A power generating plant comprising a coal gasifier in which gaseous fuel is generated, an air heater which supplies heated air to the gasifier, a gas cleanup complex downstream of the gasifier, a steam generator fired by the gaseous fuel, a gas turbine fired by said gaseous fuel, a booster fan downstream of the gas cleanup complex, a booster fan inlet heater upstream of the booster fan, a fuel preheater upstream of the steam generator for heating the gaseous fuel, a low temperature liquid couplant heat exchanger heated by the combustion exhaust gases from the steam generator, the liquid heated in the low temperature liquid couplant being used for heating in the air heater, the booster fan inlet heater, and the fuel preheater.

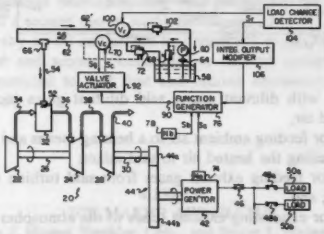
4,238,924

CONTROL SYSTEM

Hidetoshi Kanegae, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 4, 1978, Ser. No. 948,344
Claims priority, application Japan, Dec. 23, 1977, 52-156055
Int. Cl.[3] F02C *9/04*
U.S. Cl. 60—39.28 R **17 Claims**

1. An output control system for a gas turbine having a fuel combustor and a fuel supply circuit for the fuel combustor, comprising a fuel flow control valve provided in said fuel supply circuit and operable for continuously varying the flow rate of fuel therethrough; turbine output detecting means responsive to the variation in the output speed of the gas turbine for producing an output signal variable with the detected turbine output speed; turbine output preset means for producing a signal representative of a desired output speed of the gas turbine; a function generating circuit connected to said turbine output detecting means and said turbine output preset means and including a subtractor operative to produce an analog signal which is continuously variable in magnitude with the difference between the detected and desired turbine output speeds represented respectively by the signal from the turbine output detecting and preset means, and an integrator connected to said subtractor and operative to produce an analog output signal representative of the time integral of said difference represented by the output signal from said subtractor, said



function generator circuit being operative to produce an analog output signal continuously variable in magnitude with the output signal from said integrator; valve actuating means electrically connected between said function generating circuit and said fuel flow control valve for continuously varying the opening degree of the fuel flow control valve in accordance with the analog output signal from the function generating circuit; load-change detecting means responsive to the variation in the amount of load on the gas turbine and operative to produce an output signal having a limited time duration in response to an abrupt change in the amount of load on the gas turbine; and integrator output modifying means connected between said load-change detecting means and the integrator of said function generating circuit and operative to modify the output signal of the integrator to vary at an increased rate at least for a period of time corresponding to the duration of the output signal from said load-change detecting means.

4,238,925

GAS TURBINE SYSTEM WITH OXYGEN VAPOR-FUEL SYSTEM

Frank E. Lowther, Buffalo, N.Y., assignor to Purification Sciences Inc., Geneva, N.Y.

Continuation-in-part of Ser. No. 879,969, Feb. 21, 1978, abandoned, and Ser. No. 889,851, Mar. 24, 1978, and Ser. No. 890,456, Mar. 27, 1978, Pat. No. 4,169,017. This application Sep. 11, 1978, Ser. No. 941,298
Int. Cl.[3] F02C *3/20*
U.S. Cl. 60—39.46 R **23 Claims**

1. In a gas turbine comprising a compressor, a first turbine connected by a shaft to said compressor, an output shaft connected to said turbine, a throttle, a burn chamber, a duct from the burn chamber to the turbine, means for feeding ambient air from said compressor to said turbine, a tank for liquid fuel, means for feeding fuel from said tank to said burn chamber, control means for generating an intermittent burn-cool operating cycle comprising a burn phase followed by a cool phase, means for storing a cryogenic oxidant, means for vaporizing said cryogenic oxidant and feeding the vaporized oxidant to said burn chamber, means for feeding said fuel to said burn chamber, and means for burning said fuel and vaporized oxi-

dant in the entirety of said burn chamber during said burn phase whereby gases fed from said burn chamber to said turbine during said burn phase include hot combustion product gases, the improvement including:

means for vaporizing said liquid fuel;

a mixer located intermediate said burn chamber and an inlet to said turbine for mixing said hot combustion product gases with dilutant gases, said dilutant gases including heated air,

means for feeding ambient air to a heating means and means for feeding the heated air to said mixer;

means for feeding exhaust gases from said turbine to said mixer; and

means for exhausting exhaust gases to the atmosphere.

4,238,926

LIQUID PROCESSING

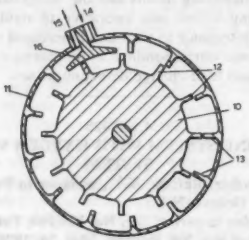
Ernest A. Timby, Frimley, and Rodney H. Walsh, Hindhead, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Sep. 18, 1978, Ser. No. 943,090

Claims priority, application United Kingdom, Sep. 22, 1977, 39607/77

Int. Cl.³ F02C 9/04; B64D 37/32

U.S. Cl. 60—39.46 R **9 Claims**



1. Aircraft fuel supply apparatus comprising a fuel tank, primary pump means, a main degrader and a relief degrader arranged in parallel, a filter, a flow meter, a heat exchanger, a high pressure pump and a flow control unit, in substantially the order herein listed, each said degrader incorporating:

a cylindrical stator having vanes projecting substantially radially inwardly,

a cylindrical rotor concentrically inside said stator and having vanes projecting radially outwardly, there being thus formed an annular chamber between said rotor and said stator,

an inlet to the chamber, and

an outlet to the chamber at a substantial circumferential distance downstream of said inlet,

said stator vanes and said rotor vanes being bounded by common radial planes

the radial length of said vanes being between 2.5% and 20% of the stator vane pitch circle diameter, and

said rotor being rotatable within said stator to subject fuel in the stator to shear and acceleration forces before it emerges at said outlet,

said apparatus being arranged and operative such that said primary pump means supplies fuel from said fuel tank to at least one of said degraders whence the fuel passes via said filter, said flow meter, said heat exchanger, said high pressure pump and said flow control unit to a fuel burner, and said degraders being operative in consort during periods of relatively high fuel demand and one alone in periods of relatively low fuel demand.

4,238,927

ROTARY EXCHANGER FOR GAS TURBINE INSTALLATIONS

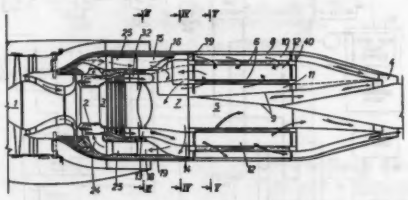
Raymond J. M. Joubert, Savigny sur Orge, and Jean G. Bouiller, Brunoy, both of France, assignors to Societe' Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Dec. 1, 1978, Ser. No. 965,342

Claims priority, application France, Dec. 5, 1977, 77 37108

Int. Cl.³ F02C 7/105

U.S. Cl. 60—39.51 H **14 Claims**

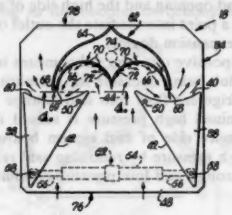


1. A rotary heat exchanger for gas turbine installations, comprising thermal exchange matrices, in the form of a cylindrical ring rotatable about the axis of the turbine, two fixed housings, rotary drive means for the said cylindrical ring between said two fixed housings, gaseous fluid passages between the housings and the exchange matrices, fixed rings forming the ends of the housings and between which the cylindrical ring turns, means for the distribution of the fluids, a circumferential sealing device interposed between said fixed rings and the ends of the cylindrical ring, an axial sealing device, separating the passage of the hot and cold fluids between two cylindrical sectors of the exchange matrices, characterized in that it comprises at least two annular exchange matrices, which are concentric with respect to the axis of the turbine, said matrices being separated by a cylindrical annular space, defining a passage for fluids, a circumferential sealing device, comprised in part by the inside and outside edges of the exchange matrices and by concentric cylinders of a frictional material, which cooperates with the axial edges of the exchange matrix, each cylinder being attached to fixed rings by support means, characterized in that the support means have annular chambers in which U-profiled rings are placed, having centering means and attached to the fixed ring, the space between the rings and the lateral walls of the annular chambers receiving the concentric cylinders of a frictional material.

4,238,928
HYDRAULIC ENGINE

Vekoslav A. Stupica, 2911 N. 73rd Pl., Kansas City, Kans. 66109

Filed Feb. 14, 1979, Ser. No. 11,808
Int. Cl.³ B63H 11/04
U.S. Cl. 60—221 12 Claims



1. A hydraulic engine for propelling a water-borne conveyance along a path of travel through the water, said engine comprising:

structure presenting an impingement surface;

means for creating a pressurized stream of water;

means for directing said pressurized stream against said impingement surface,

said impingement surface and stream-directing means being cooperatively oriented such that said stream of pressurized water is directed generally parallel to said path of travel, and the water of said stream is thence directed by said impingement surface in a direction generally opposite to said path of travel;

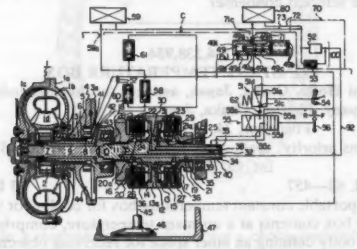
means for mounting said surface-presenting structure and said stream-directing means on said conveyance below the water line thereof and in a disposition for propelling said conveyance along said path, when said stream-creating and directing means operate; and

flow-directing means for directing a flow of water, in addition to said pressurized stream of water, against said impingement surface as said conveyance moves along said path of travel.

4,238,929
ARRANGEMENT TO COOL OIL IN HYDRAULIC CONTROL SYSTEM OF AUTOMATIC TRANSMISSION FOR INDUSTRIAL VEHICLE

Kazuyoshi Fujioka, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 26, 1979, Ser. No. 52,134
Claims priority, application Japan, Jun. 27, 1978, 53/76937
Int. Cl.³ F16D 33/00
U.S. Cl. 60—336 11 Claims



1. An arrangement to cool the oil in a hydraulic control system of an automatic transmission for an industrial vehicle, the automatic transmission including a hydrokinetic torque converter, the arrangement comprising:

a transmission case;

an operating pressure feed line;

a pressure regulator valve to regulate the magnitude of pressure in said operating pressure feed line, said pressure regulator valve including a drain port, a lubricating oil feed port and a hydraulic pressure responsive valve element that is displaceable to uncover said lubricating oil feed port before it uncovers said drain port upon regulating operation thereof;

feed passage means for feeding the oil under pressure from said operating pressure feed line to the torque converter and exhaust passage means for exhausting the oil from the torque converter;

said transmission case being formed with two connectors, a first one of which communicates with said exhaust passage means;

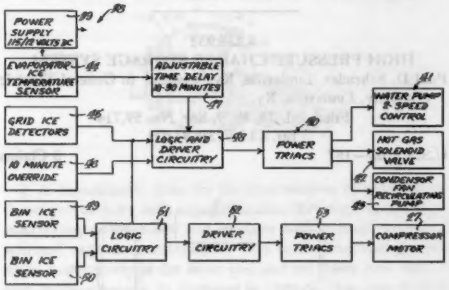
means for cooperating with said transmission case to define a passage interconnecting said lubricating oil feed port and a second one of said connectors;

whereby an oil cooler can be connected to any one of said first and second connectors or two oil coolers can be connected to said first and second connectors, respectively.

4,238,930
ICE MAKER APPARATUS

Stephen J. Hogan, Boulder, Colo., and Roger L. Nyland, Lincoln Township, Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 26, 1978, Ser. No. 972,657
Int. Cl.³ F25C 1/00
U.S. Cl. 62—138 25 Claims



1. In an ice maker having a refrigerated ice-forming plate and means for flowing water in heat transfer association with said plate to build up a layer of ice thereon, the improvement comprising:

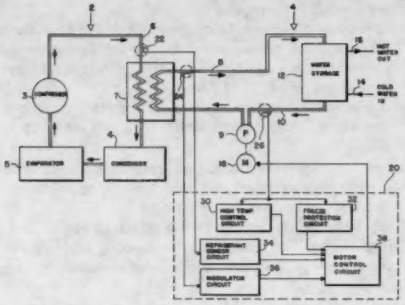
sensing means for sensing the building of the ice layer to a first preselected initial thickness; and

timer control means for changing the rate of ice layer formation while causing continued flowing of the water for a preselected period of time subsequent to said sensing means sensing said preselected initial thickness on said plate thereby to provide an improved controlled increase of the thickness of the ice layer to a second, desired, final thickness.

4,238,931
WASTE HEAT RECOVERY SYSTEM CONTROLLER

Scott Campbell, Melbourne, Fla., assignor to Energy Conservation Unlimited, Inc., Longwood, Fla.

Filed Jan. 25, 1979, Ser. No. 6,269
Int. Cl.[3] F25B *39/04*
U.S. Cl. 62—183 13 Claims



1. In a system having a subsystem for recovery of waste heat from a medium utilizing a heat exchanger and a transfer fluid, and having a pump for circulation of the transfer fluid, the method of control of the subsystem comprising the steps of:

pumping the transfer fluid through the heat exchanger;

sensing the temperature of the transfer fluid after exiting the heat exchanger in a manner proportional to such sensed temperature;

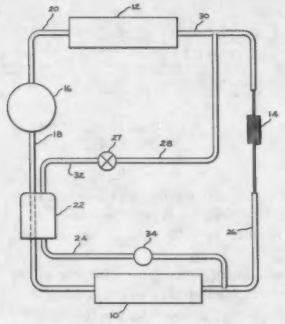
sensing the waste heat medium temperature at the input of the heat exchanger; and

maintaining a minimun rate of flow of the transfer fluid through a heat exchanger without regard to such outlet temperature when the waste heat medium temperature is greater than a first pre-selected value.

4,238,932
HIGH PRESSURE CHARGE STORAGE SYSTEM

Paul D. Schrader, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jul. 23, 1979, Ser. No. 59,714
Int. Cl.[3] F25B *41/00*
U.S. Cl. 62—197 3 Claims



1. In a refrigeration system including a compressor, condenser, an expansion device dividing said system between high and low pressure sides, an evaporator, and a suction line in series connected to form a closed refrigerant circuit, a refrigerant control means comprising:

a storage volume in heat exchange relation with said suction line, including first and second openings,

means defining a low-pressure conduit communicating with said first opening and the low side of said refrigeration system at a point intermediate said expansion device and the inlet of said evaporator,

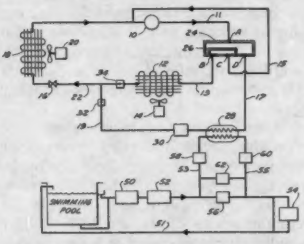
means defining a high pressure conduit communicating with said second opening and the high side of said refrigeration system at a point intermediate the outlet of said condenser and said expansion device,

pressure-responsive one-way valve means in said high pressure conduit being operable for permitting high-pressure liquid refrigerant flow into said storage volume when a predetermined high pressure is sensed to maintain said high pressure side of said system below said predetermined high pressure by returning said refrigerant to said system through said low pressure conduit.

4,238,933
ENERGY CONSERVING VAPOR COMPRESSION AIR CONDITIONING SYSTEM

Murray Coombs, 20206 Germain St., Chatsworth, Calif. 91311

Filed Mar. 3, 1978, Ser. No. 883,229
Int. Cl.[3] F25B *27/02, 13/00*
U.S. Cl. 62—238 E 12 Claims



1. An energy conserving vapor compression air conditioning system, comprising

a compressor,

an evaporator,

an air cooled condenser,

conduit means for connecting said compressor, said evaporator, and said air cooled condenser into a continuous loop,

a liquid cooled condenser connected to said conduit means in parallel with said air cooled condenser,

means for selectively providing a refrigerant flowing through said conduit means to either said air cooled condenser or said liquid cooled condenser, and

means for exhausting excess refrigerant from the non-selected condenser and returning the excess refrigerant to the selected condenser.

4,238,934
CONSTANT TEMPERATURE BOX

Masashi Hotta, Osaka, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Apr. 24, 1979, Ser. No. 32,957
Claims priority, application Japan, Apr. 28, 1978, 53-57980
Int. Cl.[3] F25D *3/08, 3/10*
U.S. Cl. 62—457 3 Claims

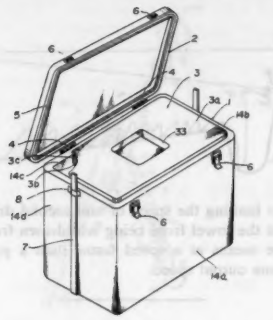
1. A portable constant temperature box for cooling or warming the box contents at a constant temperature, comprising:

(a) a body defining an inner space for receiving objects to be kept warm or cold, said body having an upper opening and comprising side walls and a bottom wall which are of adiabatic constructions,

(b) a lid of adiabatic construction pivoted to the upper portion of said body to open or close said upper opening,

(c) means for tightly closing said upper opening with said lid,

(d) a container forming a cooling or heating source supported horizontally at an uppermost portion of said body, said container projecting upwardly from the uppermost portion of said box body and comprising an airtight, flat, hollow container having a small height for receiving liquid serving as the cooling or heating medium and a



liquid intake and a stopper for closing said intake, said container having at an upper wall thereof a recess for receiving small articles and an upper wall of adiabatic construction except for a portion thereof which forms at least the bottom of said recess, said portion having a heat-transferable construction; and

(e) support means for horizontally supporting said container at an uppermost portion of said body.

4,238,935

METHOD FOR MANUFACTURING A CHAIN FROM THE VERTEBRA OF AN ANIMAL

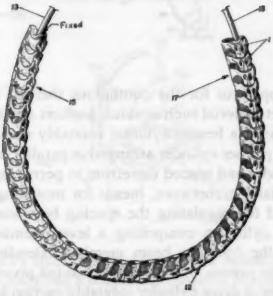
Paul-Marie B. Oudet, Avenue Marcellin Poncet, 84560 Menerbes, and Jean-Marie P. Oudet, Tour Athenes 75, rue du Javelot, 75645 Paris, both of France

Filed Aug. 16, 1978, Ser. No. 934,164

Claims priority, application France, Aug. 23, 1977, 77 25685; Apr. 17, 1978, 78 11229

Int. Cl.³ A44C *11/00*; F16G *13/00*

U.S. Cl. 63—2 **16 Claims**



1. In a method for manufacturing a chain, particularly for ornamental use, the steps of:

taking a vertebra from an original vertebral column of an animal,

removing the projecting parts including the spinous process and the points of fixation of the ribs from said vertebra to give the vertebra a regular shape to form a vertebra module,

reproducing the so obtained vertebra module, said reproduced modules conserving the surfaces of articulation of the original vertebra, and

fitting these reproduced modules in one another in the manner of the original vertebral column, and joining them by means of a supple cord on which said reproduced modules are threaded to maintain these modules fitted to one another.

15. A chain obtained by the method of claim 1.

4,238,936

UNIVERSAL HOMOKINETIC JOINT

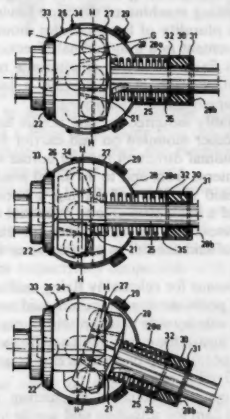
Gaston Devos, "La Reale", 06230 Villefranche-sur-Mer, France

Filed Mar. 8, 1979, Ser. No. 18,559

Claims priority, application France, Apr. 28, 1978, 78 12668

Int. Cl.³ F16D *3/30*

U.S. Cl. 64—21 **5 Claims**



1. A homokinetic joint for the transmission of a torque between two ends by balls engaged in the races made in said ends, comprising an inner end and an outer end, at least two tracks whereof each is constituted by two semicylindrical grooves made respectively in the inner end and the outer end, each of said grooves having its diameter in cross-section contained in the bisecting plane passing through the geometrical centre of the joint and the geometrical centre of the ball contained in the groove, oriented diagonally in accordance with the bisectrix of the angle between a radial axis, passing through the geometrical centre of said ball and said geometrical centre of the joint and perpendicular to the longitudinal axis of the corresponding end, and an axis perpendicular to said radial axis and passing through the geometrical centre of the ball in question, as a result of which each of the balls is made to roll and to be guided between two poles located on the radial axis and two other poles located on the axis perpendicular to the radial axis which has the effect of constantly and imperatively maintaining the geometrical centres of the balls of the bisecting plane of the respective longitudinal axes of the two ends and of causing the balls to transmit the torque in two rotation directions of the joint, the unitary pressure on the balls being considerably decreased in one of the two rotation directions.

4,238,937

FABRIC MANIPULATING DEVICE FOR MANIPULATING THE LOOPS OF A KNITTED FABRIC

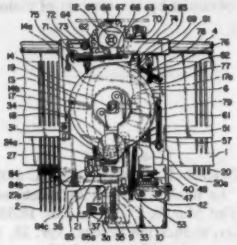
Mitsuo Nakaoka, Kodaira, Japan, assignor to Silver Seiko, Ltd., Kodaira, Japan

Filed Jul. 5, 1979, Ser. No. 54,944

Claims priority, application Japan, Oct. 31, 1978, 53-148881[U]

Int. Cl.[3] D04B 7/00

U.S. Cl. 66—60 H 14 Claims



1. In a fabric manipulating device for manipulating a knitted fabric on a knitting machine of the type having a needle bed that includes a plurality of latch needles mounted therein for individual movement in a longitudinal direction and a row of sinker elements fixed thereon in an alternate relationship with the latch needles, each needle having a latch and a butt thereon, the improvement comprising:

a carrier slidably mounted on said needle bed;

a needle member mounted on said carrier for movement in the longitudinal direction thereof across said row of said sinker elements from and to an initial position outside the range of said needles and having a hook at a rear end thereof and a latch pivotable to open and close said hook;

cam means mounted on said carrier for engagement with said butts of said needles to position same along the length thereof;

positioning means for releasably fixing said carrier in any of the needle positions so as to permit said needle member to move in a side-by-side relation with a particular needle;

loop control means for controlling needle loops to position a particular needle loop on said particular needle in a predetermined fixed position; and

a manually operated actuator mechanism on said carrier including a cam for actuating said needle member to move first from said initial position to project into said particular loop under control of said loop control means and then to said initial position to catch said particular loop at the hook thereof whereupon an old loop which may have been on said needle member is knocked over therefrom.

4,238,938

WASHING MACHINE AND ACCUMULATOR DEVICE THEREFOR

John F. Spear, Dorking, England, assignor to Universal Towel Company Limited, Sussex, England

Filed Aug. 9, 1978, Ser. No. 932,369

Claims priority, application United Kingdom, Aug. 12, 1977, 33978/77

Int. Cl.[3] D06F 29/00, 35/00; B65H 17/02, 17/44

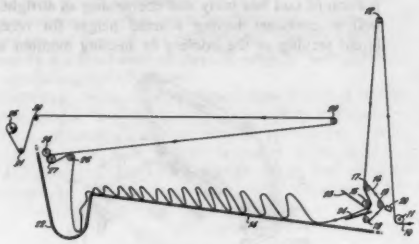
U.S. Cl. 68—13 R 13 Claims

1. An accumulator device for temporarily storing a towel used in continuous feed towel cabinets as it passes through a towel washing machine comprising:

accumulator means through which the towel is passed for storing a portion of the towel in loosely formed folds;

first drive means for feeding the towel into the accumulator means at a predetermined input speed;

second drive means independent of said first drive means for removing the towel from the accumulator means at a variable speed greater than the predetermined input speed, said variable speed continuously increasing with the amount of towel removed from said accumulator means; and



means for limiting the speed of said second drive means to prevent the towel from being withdrawn from the accumulator means at a speed faster than a predetermined maximum output speed.

4,238,939

APPARATUS FOR THE CONTINUOUS THERMAL TREATMENT OF FLEXIBLE SHEET MATERIAL

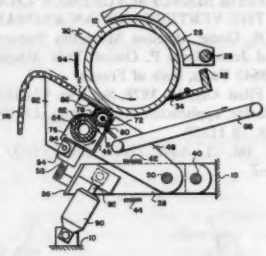
Zdenek Miculka, Otrokovice; Vladislav Janirek, Gottwaldov; Vladimir Rektorik, Otrokovice, and Karel Bajak, Krnov, all of Czechoslovakia, assignors to Vyzkumny ustav kozedelny, Gottwaldov, Czechoslovakia

Filed Mar. 29, 1979, Ser. No. 25,271

Claims priority, application Czechoslovakia, Mar. 31, 1978, 2065/78

Int. Cl.[3] C14B 1/06, 17/00

U.S. Cl. 69—43 9 Claims



1. The apparatus for the continuous thermal treatment of flexible sheet material such as skins, leathers and the like comprising a frame, a heated cylinder rotatably mounted on said frame and a presser cylinder arranged in parallel relation to the heated cylinder and spaced therefrom to permit passage of the sheet material therebetween, means for mounting the presser cylinder and for regulating the spacing between the presser and heated cylinders comprising a lever member pivotably carried by the frame, a beam member extending generally parallel to the presser cylinder and mounted pivotably on said lever member, a drive cylinder rotatably carried by said frame on the side of said presser cylinder remote from said heated cylinder and extending parallel to said presser cylinder, said presser cylinder being freely supported on said drive cylinder and rotatable thereby, means for selectively pivoting said beam member for regulating the spacing between said presser and heated cylinders, and means for selectively pivoting said lever member relative to said frame.

4,238,940
VARIATION IN SELF SECURING THEFT PROOF CHAIN BINDER

Delmer L. McWhorter, 929 Drever St., West Sacramento, Calif. 95691

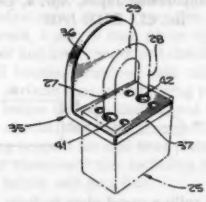
Filed Apr. 30, 1979, Ser. No. 34,870
Int. Cl.[3] E05B 73/00
U.S. Cl. 70—14 9 Claims

1. A chain binder comprising a handle, an upper and lower pivot point on said handle, a bifurcated clevis arm disposed on said upper pivot point, a bar pivotally connected to the lower pivot point whereby said bar extends through the clevis arms, and a securing mechanism disposed within said clevis section comprising a first hole extending along the longitudinal axial extent of said clevis section, a second hole disposed proximate to the top portion of said first hole orthogonally thereto, a third hole orthogonally disposed to both said first and second holes downward from said second hole and extending through said clevis section, spring means disposed in said first hole at the top, a latch bolt disposed below said spring, means disposed in said second hole to move said latch bolt, and a spur disposed on said handle having a notch to register with said third hole whereby when said spur enters said third hole, said latch bolt rides upwardly in said first hole and latches against the notch disposed on said spur.

4,238,941
SECURITY SHIELD FOR PADLOCK

David Halopoff, 7460 Bandini Blvd., Los Angeles, Calif. 90040

Filed Sep. 11, 1978, Ser. No. 941,296
Int. Cl.[3] E05B 67/38
U.S. Cl. 70—56 9 Claims

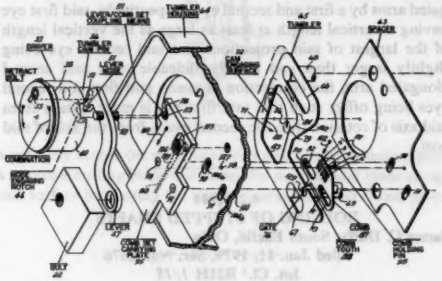


1. A security shield for protection of a padlock of the type which has a body and a shackle, the shackle having legs and an end portion joining the legs arranged so that the legs have an open position and a locked position, said shield comprising a guard section and an anchor section, said guard section having a guarding position spaced laterially at a substantial distance from said legs and said end portion and overlying the shackle at one side only of said shackle when the shackle is in locked position, said anchor section having a mounting on the body, both sections having positions relative to each other providing a clear space enabling the shackle to move clear of the body to open position.

4,238,942
DIRECT DIAL COMBINATION LOCK WITH DRIVER-CAMMED RECIPROCATING TUMBLERS AND SCRAMBLED COMBS

Joseph J. Parrock, Sr., Milford, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Feb. 23, 1979, Ser. No. 14,351
Int. Cl.[3] E05B 37/00
U.S. Cl. 70—299 25 Claims



1. In a direct dial combination lock of the type wherein a driver is rotated to position tumblers, the driver is sequentially indexed axially to disengage the respective tumblers after such positioning, and a lever is movable into connection with the driver for operating a bolt after the tumblers are properly positioned, the improvement comprising,

means mounting said tumblers for reciprocating movement,

a rotary cam operated by the driver and engageable within each tumbler to cam the tumbler back and forth in said reciprocating movement as the driver is rotated,

a set of combs respectively cooperable with gates presented by the tumblers,

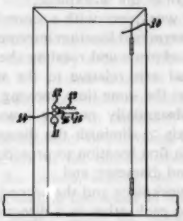
the respective combs being receivable in the gates when the corresponding tumblers have been moved to positions of alignment with respect to the combs, and

coupling means between the lever and the comb set for holding the comb set away from the tumblers until the lever is moved toward connection with the driver for withdrawing the bolt.

4,238,943
DEAD BOLT LOCK ACCESSORY

Mathew F. Betkouski, 5132 Whitsett Ave., North Hollywood, Calif. 91607

Filed May 14, 1979, Ser. No. 38,785
Int. Cl.[3] E05B 13/00
U.S. Cl. 70—416 11 Claims



1. A dead bolt lock accessory for mounting on vertical surface to function a time delay in unlocking the lock comprising (1) a first elongated arm attached to the inside manually

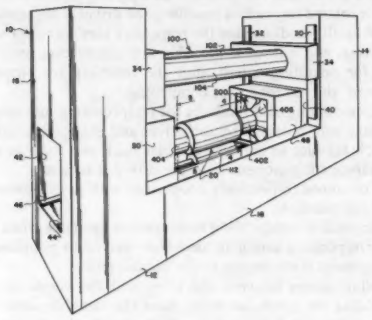
operated handle of a dead bolt lock, the arm containing a series of regularly spaced vertically upward projections of increasing vertical length as distance from the axis of rotation of said handle increases, (2) mounted vertically above or below said dead bolt handle a fixed post and a collar rotatably attached to said post, said collar carrying a spring biased radially slideable pin which is capable of engaging a hole in said fixed post, said collar having fixed to it a second elongated arm substantially the same length as said first elongated arm and positioned in vertical alignment with said first elongated arm, said second elongated arm having a smooth level surface, a constant cross section, and a weighted portion at its free end; and (3) a linking member slideably attached to both the first and second elongated arms by a first and second eye, respectively, said first eye having a vertical length at least as large as the vertical length of the largest of said projections and said second eye being slightly larger than and loosely slideable over said second elongated arm, the connection between said first and second eyes being offset such that said first eye is more distant from said axis of rotation than the second eye is from the axis of said post.

4,238,944

ROLLING OF STEPPED SHAFTS

James C. Duffy, South Euclid, Ohio

Filed Jan. 11, 1979, Ser. No. 2,676
Int. Cl.³ B21H *1/18*
U.S. Cl. 72—84 **20 Claims**



1. A method of forming a stepped shaft from a solid metal member having a longitudinal axis extending substantially centrally through the member between opposite ends thereof, comprising the steps of:

(a) engaging the outer surface of the member with a first set of roll means for rotating the member about the longitudinal axis and for compressing the outer surface of the member to form a workpiece having a rolled outer surface of a desired first diameter extending along at least a desired first length of the workpiece;

(b) engaging the workpiece with a second set of roll means at a first predetermined location intermediate the opposite ends of the workpiece and rotating the workpiece about the longitudinal axis relative to the second set of roll means while, at the same time, moving the second set of roll means substantially radially inwardly toward the longitudinal axis to diminish the diameter of the workpiece near such first location to provide a shaft region of a desired second diameter; and

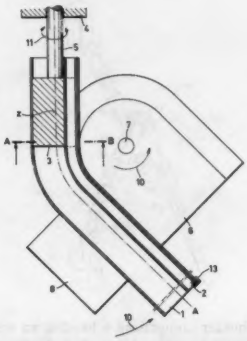
(c) moving the workpiece and the second set of roll means with respect to each other in a direction paralleling the longitudinal axis while continuing to rotate the workpiece relative to the second set of roll means, thereby extending the axial length of the second diameter region along a desired second length of the workpiece.

4,238,945

APPARATUS FOR BENDING A JACKETED TUBE

Fritz Busse, Hilden; Hans-Walter Busch, and Peter Michelatsch, both of Solingen, all of Fed. Rep. of Germany, assignors to Rigobert Schwarze, Cologne, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 973,073
Int. Cl.³ B21D *9/05*
U.S. Cl. 72—150 **6 Claims**



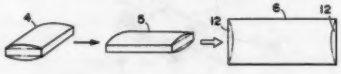
1. An arrangement for bending, especially cold bending, an elongated jacketed tube including an outer tube and an inner tube extending inside the outer tube, said arrangement comprising bending core means, including at least one bending core fittingly received in the outer tube and having at least one recess extending along the elongation of said core and operative for receiving the inner tube; means for bending the jacketed tube about an axis normal to the longitudinal axis of the jacketed tube to thereby bend the inner and outer tubes simultaneously with said means for bending the jacketed tube being disposed adjacent said bending core and provided with means for holding the jacketed tube; and said bending core further comprising means for varying eccentricity of the inner tube relative the outer tube during the bending of the inner and outer tubes simultaneously.

4,238,946

METHOD FOR ROLLING METAL PLATE

Kazuya Tsubota, Okayama, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 891,188, Mar. 29, 1978, abandoned. This application Aug. 21, 1979, Ser. No. 68,436
Claims priority, application Japan, Apr. 4, 1977, 52-38306
Int. Cl.³ B21B *1/00*
U.S. Cl. 72—199 **14 Claims**



1. A method for rolling metal plate to form a thinner plate having a desired thickness comprising the steps of:

rolling the metal plate in a longitudinal direction at a predetermined broadside ratio, said ratio being the final plate width divided by the initial plate width, to form a first metal plate having edge and crop portions;

sizing the first metal plate such that a central portion of said first plate in a section parallel to said longitudinal direction is greater in thickness than that of the end portions thereof if the edges of the first metal plate are spool shaped or sizing the first metal plate such that a central portion of

the first plate in a section parallel to a longitudinal direction thereof is less in thickness than that of the end portions thereof if the edges of the first plate are barrel shaped;

rotating the sized first metal plate 90° in a horizontal plane;

rolling the first metal plate to form a second plate;

sizing the second plate such that the central portion of the second plate in a section normal to said longitudinal direction thereof is thinner than the end portions thereof if the crop portions of the second plate bulge outwardly or sizing the second plate such that the central portion of the second plate in a section normal to a longitudinal direction thereof is thicker than the end portions thereof if the crop portions of the second plate are sunken;

rotating the second metal plate 90° in a horizontal plane; and

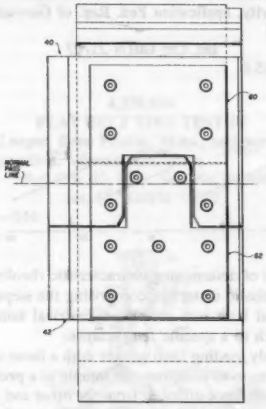
rolling the second plate.

4,238,947

WORK ROLL CHOCK ASSEMBLY FOR A ROLLING MILL

Howard A. Graham, Belleville, Ill., and Charles Palubiak, St. Louis, Mo., assignors to National Steel Corporation, Pittsburgh, Pa.

Filed May 9, 1979, Ser. No. 37,935
Int. Cl.³ B21B *31/02*
U.S. Cl. 72—237 **21 Claims**



1. A rolling mill stand comprising upper and lower work roll chocks adapted to be removably mounted in the window of a mill housing, upper and lower work rolls supported in said chocks and cooperating to define a pass line for material to be rolled therebetween, a pair of liner plates rigidly mounted on each of said upper and lower work roll chocks for aligning the chocks in a mill housing window, said chocks each having vertical support surfaces thereon including portions extending both above and below the pass line defined by the work rolls supported in the chocks, said vertical support surfaces underlying and providing support for said liner plates mounted on the chocks, said liner plates each also including portions extending both above and below said pass line.

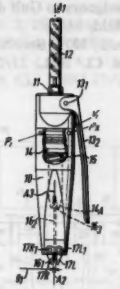
4,238,948

CRIMPING AND CUTTING TOOL

Edwin J. Rose, Fareham, England, assignor to Elite Engineering Limited, England

Filed Feb. 22, 1979, Ser. No. 13,912
Int. Cl.³ B21F *5/00*; B25B *25/00*
U.S. Cl. 72—332 **11 Claims**

1. A crimping and cutting tool, for wire, or the like, comprising: a pair of relatively movable jaws, means for closing said jaws in use to crimp a wire therebetween to form a crimping gap, said jaws also defining a surface located at the crimping gap and the said surface being shaped and oriented for defining



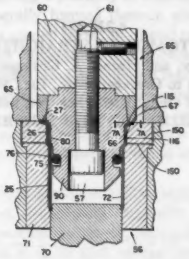
a pathway across the wire being crimped at said crimping gap, a movable cutting blade and means for moving said blade along said surface for cutting the wire at said surface and at said jaws.

4,238,949

PROCESS AND APPARATUS FOR MAKING METAL OUTERS AND INNERS

Ralph E. Roper, Indianapolis, Ind., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 691,720, Jun. 1, 1976, abandoned, Continuation-in-part of Ser. No. 622,269, Oct. 14, 1975, abandoned. This application Aug. 28, 1978, Ser. No. 937,278
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—358 **12 Claims**



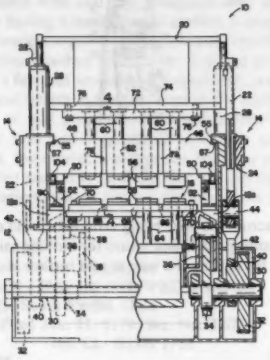
1. A process for making a metal annular member of precise tolerances which comprises placing an annular sheet metal blank between a punch and an external die, forcing the annular blank into the external die by means of the punch so that the external die reduces the outside diameter of the blank, maintaining said external die in continuous contact with the portion of said blank that is reduced in diameter, causing at least a portion of the inside diameter of the blank to contract as dictated by said reduction of the outside diameter and without interference with the punch, seating one end of the blank against a ridge surrounding the inside of the external die, and driving the punch axially inside the annular blank and the external die until the punch seats against the other end of the blank thereby forming the blank into the desired annular member configuration as determined by the configuration of the punch and the external die and the ridge thereon.

4,238,950

BOLSTER ARRANGEMENT FOR OPPOSED SLIDE DOUBLE ACTING PRESS

Louis F. Carrieri, LaGrange Park, and Edwin A. Spanke, Oak Forest, both of Ill., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Apr. 9, 1979, Ser. No. 28,274
Int. Cl.³ B21J *13/02*
U.S. Cl. 72—446 **21 Claims**



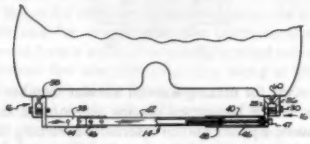
1. A press comprising, frame means, upper slide means supported by said frame means for vertical reciprocation, lower slide means supported by said frame means for vertical reciprocation, bolster means between said upper and lower slide means, means to reciprocate said upper and lower slide means toward and away from said bolster means, means supporting said bolster means for horizontal displacement relative to said frame means from a first position between said upper and lower slide means and a second position outwardly adjacent said frame means, and means releaseably interengaging said bolster means with said frame means when said bolster means is in said first position.

4,238,951

PORTABLE AUTOMOBILE STRAIGHTENING DEVICE

James D. Grainger, and Harold A. Grainger, both of Wichita, Kans., assignors to Grainger Bros., Inc., Wichita, Kans.

Filed Oct. 2, 1978, Ser. No. 948,019
Int. Cl.³ B21D *1/12*; B25B *5/14*; B23Q *9/02*
U.S. Cl. 72—457 **5 Claims**



1. Apparatus for clamping a damaged unibody vehicle structure for purposes of straightening, which is adapted to be manually secured to the underside of the vehicle body along the pinch welds, comprising:

a lightweight rigid rectangular frame constructed of two parallel side members and two parallel end members, the ends of each side member being attached to the ends of each end member forming a corner;

a gusset plate attached to each corner forming a rigid joint, and attachment point means on the gusset plate for supporting force applying apparatus; said side and end member including telescoping means therein to vary the length of said members, the telescoping means on the end members includes at least two sections, a jack screw anchored between the two sections with an exposed lug nut thereon for turning the screw into a fixed nut attached to one of said sections;

locking means on each telescoping means for preventing any telescoping movement between said sections; and

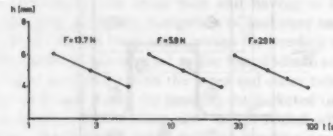
clamping means attached to the frame at each corner thereof adapted to grip the pinch weld along each side of the vehicle body, the clamping means and frame being sufficiently shallow in depth and light in weight to be manually mounted to an unelevated vehicle.

4,238,952

METHOD OF DETERMINING CHARACTERISTIC RHEOLOGICAL QUANTITIES OF VISCOELASTIC MATERIALS

Rüdiger Koopmann, Langenfeld, and Richard Juffa, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 47,977
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827593
Int. Cl.³ G01N *25/02*
U.S. Cl. 73—15.6 **3 Claims**



1. A method of determining characteristic rheological quantities of viscoelastic materials, comprising the steps of:

preheating at least two uniform cylindrical samples of the same batch to a specific temperature;

compressively loading each sample with a force on its opposite faces so as to compress the sample to a predetermined height, each force differing from the other and resulting in a testing period of between 5 and 150 seconds;

unloading the sample; and during loading and unloading in each case, measuring the period over a section of the deformation path in which the sample is at less than 60% of its original height.

4,238,953

EMISSION TEST METHOD FOR FLOATING ROOF SEALS AND APPARATUS USEFUL THEREFOR

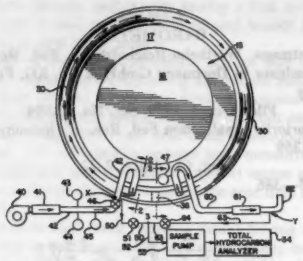
Royce J. Laverman, South Holland, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 887,185, Mar. 16, 1978, abandoned. This application May 16, 1979, Ser. No. 39,508
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—40.7 **39 Claims**

1. A method of testing the effectiveness against leakage of a seal in a gap between two surfaces which comprises:

positioning and securing an envelope means to span the seal and gap and extend to the two surfaces to thereby form an enclosed cavity or space defined by the two surfaces, the seal therebetween and the envelope means;

feeding a gas stream into the cavity and removing the gas stream from the cavity; and



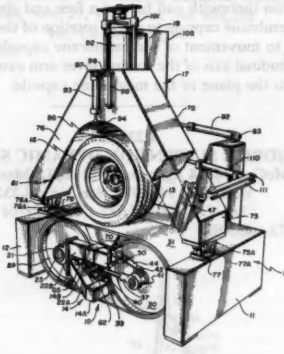
analyzing the removed gas stream for any potential contaminant which leaks past the seal in the gap.

4,238,954

FLAT BELT TIRE TESTER

William J. Langer, Eden Prairie, Minn., assignor to MTS Systems Corporation, Minneapolis, Minn.

Filed Feb. 23, 1979, Ser. No. 14,436
Int. Cl.[3] G01M *17/02*
U.S. Cl. 73—146 15 Claims



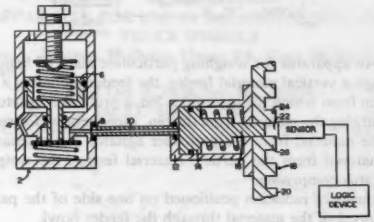
1. A tire testing machine of the flat belt type comprising a first frame assembly, a pair of rotatable drum members mounted on said frame assembly, an endless belt mounted over said drum members and having one length extending between said drum members generally in a plane, a second tire support frame, means to mount the second frame to said first frame assembly about a camber axis which lies substantially along the surface of the one length of the belt and which is generally perpendicular to the axis of rotation of said drum members, means on the second tire support frame to rotatably mount a tire to be tested in position to be moved to engage said one length, and means to control the angular position of said second tire support frame about said camber axis.

4,238,955

TIRE-PRESSURE MONITORING DEVICE

Erich Reinecke, Burgdorf, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 2, 1979, Ser. No. 16,767
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813058
Int. Cl.[3] B60C *23/02*
U.S. Cl. 73—146.5 5 Claims



1. Pneumatic tire-pressure monitoring apparatus for use with vehicles also equipped with an anti-skid device operable responsively to brake control pulses resulting from variations of angular velocity of the wheel for preventing lock-up of the wheel during braking operations, said tire-pressure monitoring apparatus comprising:

(a) a display panel operable responsively to variations of actuating pulses for indicating tire-pressure deterioration;

(b) an annular toothed member concentrically rotatable with the tire and having a plurality of equi-angularly arranged spaces peripherally formed thereon alternately between equi-angularly spaced teeth, all of said spaces, except one, being of equal dimension, said toothed member being operable for generating a magnetic field during rotation;

(c) a sliding pin member operably disposed in said one space between two adjacent ones of said teeth and normally occupying a normal position in which the dimension of said one space is maintained identical to that of the other spaces;

(d) a sensing device deployed in the proximity of said magnetic field and cooperating therewith for generating a series of tire-pressure indicating pulses of equal magnitude when said pin is in its said normal position, and being operable responsively to an irregular pattern of said magnetic field effected when said pin is slidably moved in said space out of its said normal position for producing a series of tire-pressure indicating pulses of irregular magnitude;

(e) a control circuit connected to said sensing device for receiving both said brake control and tire-pressure indicating pulses and being operable for directing said brake control pulses to the anti-skid device when said tire-pressure indicating pulses are of equal magnitude, and for blocking out said brake control pulses, upon occurrence of said tire-pressure indicating pulses of irregular magnitude, and diverting said tire-pressure indicating pulses of irregular magnitude to said display panel; and

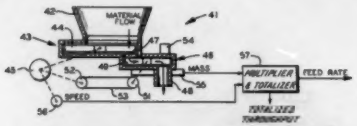
(f) means connected to the tire-pressure and operable responsively to a reduction of such pressure of a certain degree or more for effecting movement of said pin in said one space.

4,238,956

RADIATION ATTENUATION WEIGHING SYSTEM FOR A VERTICAL MATERIAL FEEDER

Joseph T. Sniezek, Keewatin, Canada; Paul W. Chase, Anoka, Minn., and Wendell D. Miller, Austin, Tex., assignors to Ramsey Engineering Company, St. Paul, Minn.

Filed Aug. 21, 1978, Ser. No. 934,737
Int. Cl.[2] G01F 1/00, 1/66; G01N 9/24
U.S. Cl. 73—861.01 15 Claims



1. An apparatus for weighing particulate material being fed through a vertical material feeder, the feeder including a storage bin from which the material is fed, a prefeeder agitator for discharging the material from the bin, a feeder bowl for receiving the material from the prefeeder agitator and discharging the material from the vertical material feeder, the weighing apparatus comprising:

a source of radiation positioned on one side of the path of travel of the material through the feeder bowl;

a radiation detection means positioned on the side of said path of travel opposite said radiation source, said detection means being responsive to the radiation received from said radiation source through the material for generating a signal representing the mass of the material in said path between said radiation source and said detection means;

means for generating a signal representing the speed at which the material is moving along said path; and

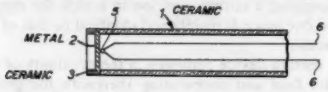
means responsive to said mass signal and said speed signal for generating a signal representing the rate at which the material is being fed through the vertical material feeder.

4,238,957

PYROMETRIC SHEATH AND PROCESS

Frank P. Bailey, Huntingdale, and Clive K. Coogan, Canterbury, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Jun. 28, 1978, Ser. No. 919,832
Int. Cl.[3] G01K 1/08, 7/00
U.S. Cl. 73—343 R 9 Claims



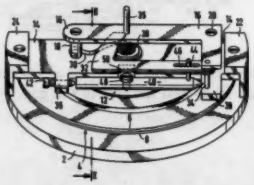
1. In a pyrometric sheath for temperature sensors comprising a hollow tubular body of a material having relatively poor thermal transmission qualities, and, disposed in an opening towards one end of the body to close the opening, a partition of relatively high thermal conductance having an outer face exposed to the exterior of the body and an inner face exposed to the hollow interior of the body, the improvement wherein, the partition is a metal foil disc of a thickness between 0.05 mm and 0.5 mm which includes a metal selected from the group consisting of metals having atomic numbers between 21 and 28 inclusive in the first transition series between 39 and 47 inclusive in the second transition series and between 57 and 79 inclusive in the third transition series, and which has a melting point not below 600° C., said hollow body is a refractory oxide ceramic selected from the group consisting of oxides of metals of groups II, III, IV, VIII of the Periodic Classification of the Elements and mixtures of such oxides; the partition is hermetically sealed about its whole periphery to said hollow body by being bonded thereto; and the partition is electrically and thermally isolated at said periphery.

4,238,958

BAROMETER

Heinz Dostmann, Wertheim-Reicholzheim, Fed. Rep. of Germany, assignor to Dostmann GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,994
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851359
Int. Cl.[3] G01L 7/12
U.S. Cl. 73—386 11 Claims



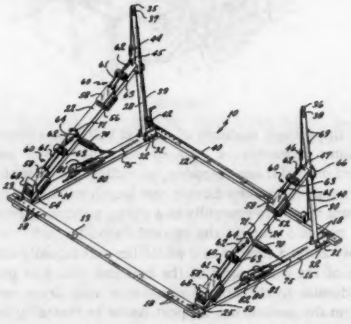
1. A barometer comprising a substantially planer stabilized membrane capsule, a base plate supporting the membrane capsule on one side thereof, pointer drive means disposed on the other side of the membrane capsule and including two substantially parallel plates fixed with respect to the base plates, a pointer shaft rotatably mounted in the two plates and a pivotably mounted drive element engaged with the pointer shaft to rotate same in response to the pivoting movement thereof and transmission means for coupling the membrane capsule to the pointer drive means, the transmission means comprising a rotatable lever shaft, a first lever arm mounted on the lever shaft for rotation therewith and coupled to the drive element to pivot same in response to rotation of the lever shaft and an elongated second lever arm mounted on the lever shaft for rotation therewith and having a free end abutting directly on the membrane capsule to effect rotation of the lever shaft in response to movement of the membrane capsule and wherein the longitudinal axis of the second lever arm extends obliquely relative to the plane of the membrane capsule.

4,238,959

AUTOMOBILE SUSPENSION DYNAMIC SIMULATOR

John C. McCann, 4034 Agua Dulce Blvd., La Mesa, Calif. 92041

Filed Feb. 14, 1979, Ser. No. 12,232
Int. Cl.[3] G01L 5/00; G01M 17/04
U.S. Cl. 73—432 SD 9 Claims



1. An automobile suspension dynamic simulator comprising:

a base;

automobile support means having hinge means along one lateral side pivotally connecting it to said base; said automobile support means comprising first and second tilting platform boards, said boards having a first and a second end, one of said ends of each of said boards being connected to said hinge means;

means for lifting the other lateral side of said automobile support means upwardly along an arcuate path;

a first pair of load measuring devices mounted atop said automobile support means adjacent its front end for positioning beneath the front tires of an automobile;

a second pair of laterally spaced load measuring devices mounted atop said automobile support means adjacent its rear end for positioning beneath the rear tires of an automobile;

a first tension load force applying means having its one end attached to said base in the area substantially beneath said first pair of laterally spaced load measuring devices, the other end of said first tension load force applying means passing vertically upwardly through an aperture in said automobile support means for attachment to structure on the automobiles front end through which passes the automobiles front center of gravity; and

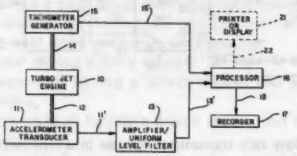
a second tension load force applying means having its one end attached to said base in the area substantially beneath said second pair of laterally spaced load measuring devices, the other end of said second tension load force applying means passing vertically upwardly through an aperture in said automobile support means for attachment to structure on the automobile's rear end through which passes the automobile's rear axle center of gravity, whereby tilting the automobile laterally, side load effects on the automobile can be measured to evaluate dynamic conditions.

4,238,960

MEANS FOR BALANCING ROTORS OF A MACHINE

George C. Curtis; Joe A. McInturff, both of Marietta; Herbert J. Rubel, Atlanta, and William F. Wall, Marietta, all of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed Nov. 27, 1978, Ser. No. 964,258
Int. Cl.³ G01M *1/16*
U.S. Cl. 73—462 **4 Claims**



1. Means for balancing multiple rotors of a machine comprising:

an accelerometer transducer connected to said machine to receive the total vibration of all said rotors at all operating speeds and produce a single output signal;

an amplifier and uniform level filter connected to said transducer to receive said single output signal and raise it to a predetermined substantially constant level signal over the entire speed range of said machine, said filter having components selected to simultaneously compensate for both the frequency dependence of said single output signal and the variable displacement allowables of said rotors;

a generator connected to each machine rotor to produce a continuous sinusoidal output signal proportional to the position and speed of its associated rotor, each said generator being indexed to its said rotor;

a processor connected to said filter and to each said generator to alternately receive the respective constant level signal and the continuous, proportional output signals aforesaid and produce a corresponding output signal for each rotor to be balanced; and

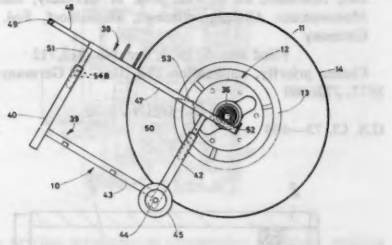
recording means connected to said processor to receive and retain each said corresponding output signal.

4,238,961

APPARATUS FOR USE IN BALANCING BUS AND TRUCK WHEELS

James A. Johnson, 59 Ocean House Rd., Cape Elizabeth, Me. 04107

Filed Oct. 9, 1979, Ser. No. 82,879
Int. Cl.³ G01M *1/04, 1/12*
U.S. Cl. 73—480 **14 Claims**



1. In combination a stand for use in balancing a large wheel such as a truck or bus wheel and an assembly in which said wheel is to be incorporated, said assembly including a shaft and means operable to connect said wheel thereto with the shaft axially thereof with the shaft ends protruding, said stand including a pair of laterally spaced wheel supporting members, each member including an upwardly disposed hook at its front end and a stop spaced rearwardly thereof, and stable supporting structure for said members having a wheel receiving chamber open at the front of the stand and upwardly between said members and of a length and depth greater than the radius of said wheel with said supported members rearwardly and downwardly inclined, said hooks extending forwardly from the front of the structure and the stops rearwardly thereof, said stand tiltable forwardly from its stable position to lower said hooks into a position to receive said shaft with the wheel in alignment with the chamber, the length of the structure such that mechanical advantage is afforded the user in returning the stand to its stable position, the wheel then being lifted, the shaft rotatably held against the stops with the wheel free to rotate relative to the stand, said stops spaced rearwardly with respect to the front of the stand to insure the stability thereof while the wheel is being tested for imbalance.

4,238,962

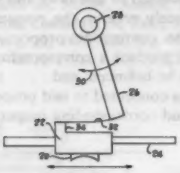
TRANSDUCER DRIVE FOR ULTRASONIC IMAGING

Jon C. Taenzer, Palo Alto, Calif., assignor to Picker Corporation, Northford, Conn.

Filed Aug. 30, 1978, Ser. No. 938,073
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—633 **14 Claims**

1. A transducer drive system for a real time scanned ultrasonic imaging system, the drive system comprising:

(a) structure for mounting the transducer for substantially linear, reciprocal motion along a path;
(b) a drive member supported for oscillatory movement; and



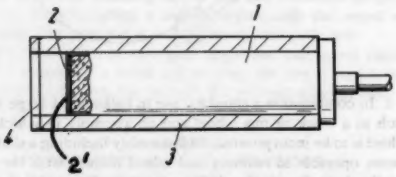
(c) a compliant element coupling between the drive member and the transducer.

4,238,963

TEST HEAD FOR ULTRASONIC TESTING OF STRUCTURAL MATERIAL

Karl Ries, Mülheim; Dieter Lather, Rheurdt; Dieter Kaiser, Mülheim; Kurt Hannoschöck, Sonsbeck, and Günter Simoneit, Mülheim, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 5, 1978, Ser. No. 912,712
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1977, 2726400
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—644 **3 Claims**



1. Transducer head for ultrasonic testing of structural materials having a transducing surface, comprising:
a means for defining an acoustic wave propagative path in front of the surface; and
a calibration reflector disposed across the path in front of the said surface and at a distance therefrom for intercepting a central portion and reflecting a small portion of any ultrasonic energy launched by the transducer, but permitting the major portion of that energy to pass said reflector on both sides due to the extension of the reflector across the path of the energy.

4,238,964

VACUUM GAUGE

Raymond A. Wolf, Albany, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 20, 1979, Ser. No. 77,321
Int. Cl.³ G01L *9/12*
U.S. Cl. 73—714 **2 Claims**

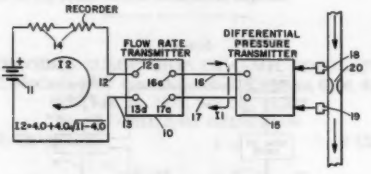
2. A means for measuring small increments of pressure variations below atmospheric pressure of fluid reactants in a container which reactants are solid at atmospheric conditions, comprising:
a housing mounted on a lid of a container, said housing having insulated walls defining an insulation chamber in said housing;
a pressure sensing device mounted on said housing in said insulation chamber;
heating means in said housing for maintaining said insulation chamber at a temperature sufficiently high to maintain reactants whose pressure is being measured by said pressure sensing device in a vapor phase within said pressure sensing device; and
an extended heat conductive hollow tube connecting said pressure sensing device to reactants located in the container, said tube being thermally isolated from the container to substantially prevent heat loss to that container, whereby it is substantially insured that reactants whose pressure is being measured by said pressure sensing means remain in a vapor phase within said tube and said pressure sensing device.

4,238,965

TWO WIRE FLOW RATE TRANSMITTER

David J. Mate, San Diego, Calif., assignor to Action Instruments Company, Inc., San Diego, Calif.

Filed Sep. 15, 1978, Ser. No. 942,610
Int. Cl.³ G01F *1/38*
U.S. Cl. 73—861.48 **10 Claims**



1. A flow rate transmitter for use in a two wire transmitter system that includes a differential pressure transmitter, a DC voltage supply, and a pair of wires connecting said voltage supply across said differential pressure transmitter said differential pressure transmitter being operable to pass a DC loop current I_1 through said wires representative of a pressure drop through an orifice; said flow rate transmitter being comprised of:
current sensing means having terminals which connect in series with said wires for passing said loop current I_1 and generating a first voltage representative thereof;
means for generating a second voltage proportional to the square root of said first voltage;
means for generating a third voltage proportional to said second voltage minus said first voltage;
voltage controller variable resistance means having terminals which connect in parallel with said pair of wires for passing a DC current I_3 therebetween proportional to said

third voltage wherein the sum I_1+I_3 is representative of flow rate through said orifice; and

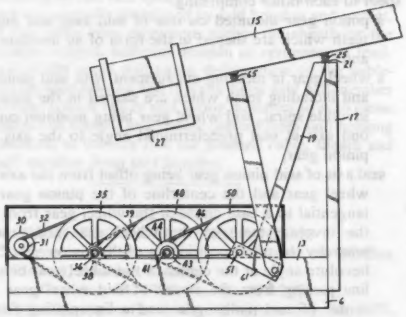
DC-DC voltage converter means having terminals which connect in series with said wires for passing current I, and for drawing power therefrom to energize all said means in said flow rate transmitter.

4,238,966

BELT DRIVE FOR PUMP JACK

Russell R. Carlson, Wessington Springs, S. Dak. 57382, and John J. Tschetter, P.O. Box 315, Huron, S. Dak. 57350

Filed Jan. 5, 1978, Ser. No. 867,132
Int. Cl.³ F16H *21/32*
U.S. Cl. 74—41 1 Claim



1. A pump operating mechanism for a pump jack which comprises:

a walking beam having counterweights on said beam including a head,

a fram pivotally supporting said walking beam for oscillating movement of a head about said supporting frame and,

a drive mechanism for driving said walking beam to oscillate the same, said drive mechanism comprising:

a drive motor having a drive sheave,

a first driven shaft having a driven sheave and a smaller drive sheave,

a second driven shaft having a driven sheave and a smaller drive sheave,

a third driven shaft having a driven sheave and having a radial crank arm secured thereto,

said driven sheaves being of equal diameter,

three series of drive belts connecting said drive sheaves to a driven sheave to drive the first shaft from said motor driven sheave, to drive the second shaft from the drive sheave on the first shaft and to drive the third shaft from the drive sheave on the second shaft, and

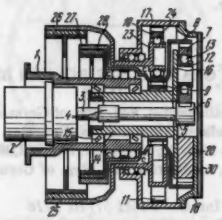
a drive link connecting said crank arms, to said walking beam for pivoting the same about said supporting frame upon operation of said motor, wherein said drive reduction is approximately 109 to 1, wherein said drive reduction is afforded by a drive sheave 4 inches in diameter driven from said drive motor, said second and third drive sheaves being approximately 5 and 7 inches in diameter respectively, and said driven sheaves being 25 inches in diameter.

4,238,967

DRIVING ARRANGEMENT

Dmitry P. Volkov, Kolpachny pereulok, 6, kv. 101, Moscow; Stanislav V. Bondarenko, ulitsa 2 Proletarskaya, 5, kv. 17, Mytischi Moskovskoi oblasti; Alexandr F. Krainev, Izmailovsky prospekt, 91, korpus 3, kv. 56; Evgeny A. Kazakov, ulitsa Polyarnaya, 3, korpus 2, kv. 10, both of Moscow; Sergei A. Surkov, ulitsa Galyanovskaya, 3a, korpus 2, kv. 155, Moscow; Valentin A. Kritsky, ulitsa Kalinina, 98a, Kamyshin Volgogradskoi oblasti; Nikolai N. Schekin, ulitsa Nekrasova, 19, kv. 17, Kamyshin Volgogradskoi oblasti; Vladimir M. Maljuk, 3 mikroraion, 10, kv. 51, Kamyshin Volgogradskoi oblasti; Leonid V. Zaitsev, Flotskaya ulitsa, 7, korpus 5, kv. 750, Moscow; Nikolai K. Grechin, Frunzenskaya naberezhnaya, 42, kv. 26, Moscow; Genrikh L. Bogorodsky, Sirenevy bulvar, 65, korpus 1, kv. 80, Moscow; Gleb K. Dobrinsky, Tenistaya ulitsa, 13a, kv. 52, and Gennady P. Koshelenko, ulitsa Posmetnogo, 33, kv. 45, both of Odessa, all of U.S.S.R.

Filed Jan. 24, 1978, Ser. No. 872,327
Int. Cl.³ F16H *57/10*
U.S. Cl. 74—758 5 Claims



1. In a driving arrangement comprising planetary gearing means adapted to transmit driving torque to an output driven member including a hub enclosed with a drum and journalled in a supporting structure on bearing means, said drum being adapted to take up the load of a moving object, an improvement consists in that said hub enclosed within said drum is connected with the latter with aid of end face discs rigidly fixed, respectively, to said hub and to said drum, these discs, in their turn, being interconnected rigidly with aid of intermediate elements extending between the planet pinions of said planetary gearing means perpendicularly to the plane of rotation thereof, the shafts of said planetary gearing means being rigidly connected with one of these discs.

4,238,968

DEVICE FOR CONVERSION OF CENTRIFUGAL FORCE TO LINEAR FORCE AND MOTION

Robert L. Cook, 605 Wilson Ave., Vallejo, Calif. 94590

Filed Sep. 25, 1978, Ser. No. 945,245
Int. Cl.³ F16H *33/20*
U.S. Cl. 74—84 R 11 Claims

1. Device for conversion of centrifugal force to linear force and motion comprising:

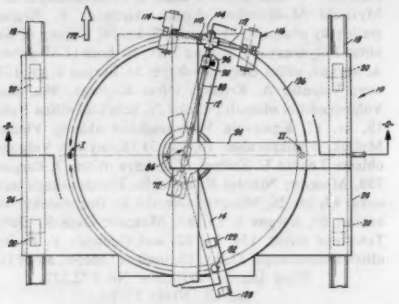
a. first arm rotating in a circular path about an axis producing centrifugal force on the axis;

b. a second arm rotating in a circular path about the axis of said first arm in a direction opposite to said first arm at a rotational speed equal to said first arm;

c. mass positioned at the end of said first arm;

d. means for transferring a portion of said mass from the end of said first arm to the end of said second arm and vice versa at two selected points in the rotational path of said arms spaced by one hundred eighty degrees, thus producing an imbalanced centrifugal force on the axis during one

hundred eighty degrees of the circular path of said first arm;



e. means for canceling a component of the imbalanced centrifugal force.

4,238,969

MECHANICAL GEARING FOR ROLLER BLINDS AND AWNINGS

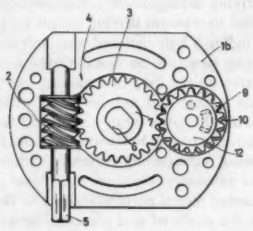
Bruno Krause, Heiligenhaus, Fed. Rep. of Germany, assignor to Klafft & Klüppelholz, Heiligenhaus, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,085

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823134

Int. Cl.³ F16H *57/10, 1/16*

U.S. Cl. 74—411.5 **6 Claims**



1. Transmission for roller blinds and awnings with a self-locking worm wheel drive having a worm wheel, comprising

a housing formed in two parts,

a shaft being mounted in said housing,

the worm wheel drive being mounted on an end of said shaft,

an abutment means disposed in said housing for limitation of the number of rotations of the shaft in the unwinding direction, said abutment means comprises:

an abutment pinion having a number of teeth, said abutment pinion meshing with said worm wheel;

a locking disc having a different number of teeth than that of said abutment pinion, said locking disc meshing with said worm wheel, said locking disc and said abutment pinion being mounted coaxial to each other in said housing;

an abutment pin axially moveably disposed in said abutment pinion;

an abutment secured to said housing;

spring means for prestressing said abutment pin,

said locking disc being formed with a slot displaceably operatively adjacent said abutment pin,

said abutment pin operatively engages said abutment in a predetermined position with said pin extending through said slot.

4,238,970

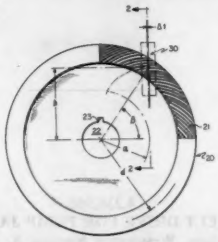
BEVOLUTE GEAR SYSTEM

Willis M. Carter, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Feb. 23, 1978, Ser. No. 880,368

Int. Cl.³ F16H *55/08*

U.S. Cl. 74—457 **6 Claims**



1. A gearing system for transmitting torque between non-intersecting axes disposed at a predetermined angle with respect to each other comprising:

a pinion gear mounted on one of said axes and including teeth which are shaped in the form of an involute spiral; and

a wheel gear in meshing engagement with said pinion gear and including teeth which are shaped in the form of an involute spiral, said wheel gear being mounted on a second axis at said predetermined angle to the axis of the pinion gear;

said axis of said pinion gear being offset from the axis of the wheel gear and the centerline of the pinion gear being tangential to a base circle of the wheel gear from which the involute teeth of the wheel gear are generated, whereby the offset positioning of the pinion gear forms a bevolute angle at the center of the wheel gear between a line passing from the center of said wheel gear to the center of said pinion gear and a line passing from the center of said wheel gear normal to the tangent line from the centerline of said pinion gear to said base circle;

said pinion gear having external involute teeth being positioned on the outer peripheral surface of said pinion gear and being in conjugate meshing engagement with said wheel gear which is a substantially flat, face gear.

4,238,971

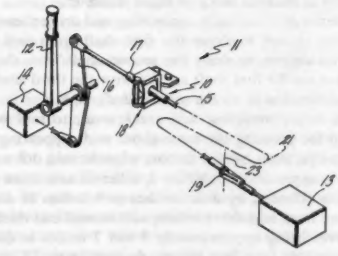
RELEASABLE PUSH-PULL SHEATHED CABLE CONTROL SYSTEM

Armand F. Amelio, Yonkers, N.Y., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 18, 1978, Ser. No. 970,763

Int. Cl.³ G05G *9/00*; F16C *1/26*; F16D *9/00*

U.S. Cl. 74—471 R **16 Claims**



1. A control system comprising:

(A) a control cable adapted to extend between the control input and output and shaped to form at least one looped portion;

(B) a sheath enveloping the cable and extending for substantially the full length thereof so that said cable may be moved within said sheath in push-pull fashion,

(C) first means fixedly positioning said sheath at one end of said looped portion,

(D) second means to fixedly position said sheath at the other end of said looped portion during normal control system operation and to release the sheath and cable in response to attempted push-pull cable following a cable jam anywhere within the sheath or within the control output, thereby establishing compression or tension loading on the cable within the sheath resulting in deformation loading on the cable-sheath loop portion to be reacted by the first and second positioning means and thereby release the cable and sheath from the second positioning means, said second positioning means comprising:

(1) a housing adapted to be fixed in position,

(2) a ball member connected to the exterior of such sheath and positioned in said housing,

(3) spring members positioned on opposite sides of said ball member, and

(4) means to releasably secure said spring members in said housing so that said spring members and said ball member are normally positioned by said housing and so that, if the cable jams anywhere within the sheath or the control output, sufficient tension or compression loading of the cable will cause deformation of the cable-sheath loop portion and thereby cause said ball member to bear against one of said spring members so as to cause deflection thereof and release thereof from said housing member, to thereby free the jammed cable, sheath and ball member from said housing.

4,238,972

REMOTE CONTROL MECHANISMS

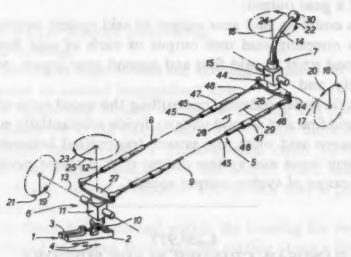
James F. Hemens, Billericay, England, assignor to Teleflex Morse Limited, Basildon, England

Filed Aug. 21, 1978, Ser. No. 934,743

Claims priority, application United Kingdom, Sep. 29, 1977, 40593/77; Jan. 4, 1978, 235/78

Int. Cl.³ B60K *20/04*

U.S. Cl. 74—473 P **36 Claims**



1. A remote control mechanism comprising push-pull control links operatively connected at one end to spaced locations of a beam, said beam being pivotally movable about mutually displaced first and second axes, said axes are rotational axes of a Hooke's-type coupling, said spaced locations of said beam moving equally in the same direction upon pivoting of said beam about said first axis, said spaced locations of said beam moving in opposite directions relative to said control links upon pivoting of said beam about said second axis, one of said axes being fixed and the other axis rotating about said one axis when said beam is pivoted about said one axis, paired coincident movement of said control links being complementary to both said spaced locations of said beam moving equally in said same direction, and differential relative movement of said control links being complementary to said spaced locations of said beam moving in said opposite directions.

4,238,973

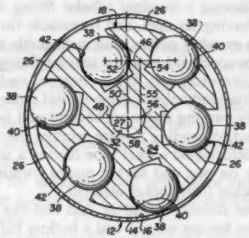
FLEXIBLE RECIPROCATING MECHANICAL CONTROL

Vincent Polo, 222 N. Ocean Blvd., Delray Beach, Fla. 33444, and Sergio R. Panunzio, 36 Hollywood Ct., Rockville Centre, N.Y. 11570

Filed Jan. 5, 1978, Ser. No. 867,009

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501 R **11 Claims**



1. In a reciprocating mechanical control for axial movement within a housing of a selected cross-sectional configuration, said control comprising:

a plurality of carrier members having a curved peripheral surface, each of said carriers including a plurality of tracks on the peripheral surface thereof, said plurality of tracks each being an endless track carrying rollable bearing elements which move in said respective track through load bearing and non-load bearing positions and therebetween in a single plane, said load bearing and non-load bearing positions being substantially parallel and each of said tracks being positioned on the peripheral surface of each said carrier so that a radius of the carrier perpendicular to a line defined perpendicular to and connecting said load bearing and non-load bearing positions intersects said line at a point thereon other than at the midpoint of said line, whereby said rollable bearing elements in said load bearing position cooperate with the housing to support and guide said carriers for axial movement in the housing:

joint means for interposition between adjacent carriers to space the same from one another and to enable pivoted relative movement therebetween, said joint means being laterally spaced from the defines of the housing to position said joint means for non-frictional axial movement relative to the housing,

each said endless track comprising a working portion to position the bearing elements in their load bearing position with a surface of each of the bearing elements projecting beyond the periphery of said carrier member for engagement with the defines of the housing,

an idler portion to position the bearing elements in their non-load bearing position with the surfaces of the bearing elements withdrawn within said carrier member spaced from the periphery thereof and out of engagement with the housing,

and interconnecting portions forming continuous extensions of said working and idler portions to complete each said endless track to enable circulating movement of the rollable bearing elements endlessly along said track.

4,238,974

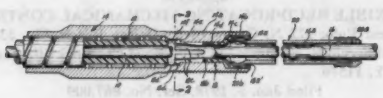
UNIVERSAL SEAL AND SUPPORT GUIDE FOR PUSH-PULL CABLE TERMINALS

Harry E. Fawcett, Tacoma, Wash., assignor to Cablecraft, Inc., Tacoma, Wash.

Continuation-in-part of Ser. No. 968,435, Dec. 11, 1978, abandoned. This application Nov. 9, 1979, Ser. No. 92,860

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501 R **14 Claims**



1. In combination with a flexible coaxial push-pull cable including coaxial outer and inner cable members, said outer cable member having a terminal tubular fitting thereon, said tubular fitting having an open-end receptacle through which said inner cable member passes, said inner cable member projecting axially beyond said terminal tubular fitting and having a terminal rod-like extension fitting thereon, said inner cable member being longitudinally slidable in said outer cable member to project by varying distances beyond said tubular fitting and being subject to bending flexure relative thereto,

a resiliently deformable socket tube having a shank portion and having on one end socket means forming a hollow ball-and-socket joint socket element,

a support tube slidably engaging said rod-like fitting, said support tube having on one end a hollow ball-and-socket joint ball element retentively engageable in said socket means in universally pivotal sealed relationship therewith,

said open-end receptacle of said terminal tubular fitting being formed and dimensioned to snugly receive by longitudinal insertion said socket tube including said shank portion and said socket means thereof with said ball element retained by said socket means, whereby said terminal tubular fitting forms a seal with said socket tube and prevents expansion of said socket means under attempted dislodgement force applied to said support tube relative to said socket tube,

said support tube and said socket tube having cooperable stop surfaces interengageable upon predetermined angular movement of said support tube out of coaxial alignment with said socket tube so as to limit flexure of said cable inner member.

4,238,975

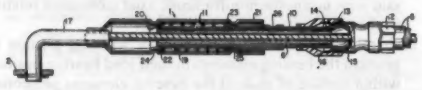
SELF-CENTERING PUSH-PULL CABLE APPARATUS

Thomas L. Jones, Adrian, Mich., assignor to Acco Industries Inc., Trumbull, Conn.

Filed Jun. 2, 1978, Ser. No. 911,823

Int. Cl.³ F16C *1/10*; G05G *1/00*

U.S. Cl. 74—502 **10 Claims**



1. A self-centering, push-pull cable apparatus comprising:

(a) an outer elongated cable sheath;

(b) a core element disposed internally of said sheath for sliding, reciprocating movement therein;

(c) a first member connected to the cable sheath in at least partially surrounding relationship with the core element;

(d) a second member connected to the core element in at least partially surrounding relationship therewith and having a portion disposed in axial, overlapping relationship with said first member for reciprocating, axial movement relative thereto upon similar movement of the core element reltive to the cable sheath as caused by the application of an input load to the core element; and

(e) spring means interconnecting said first and second members for normally holding them in a neutral, axial position and returning them to said neutral position after release of any input load being applied to the core element and causing axial movement of one of said members relative to the other in either axial direction from said neutral position, said spring means being disposed between said first and second members at the overlapped ends thereof, and extending along the overlapped end of the first member with its opposite ends fixed against axial movement in the same direction at the same time.

4,238,976

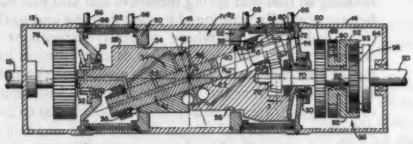
INFINITELY VARIABLE POWER TRANSMISSION AND SYSTEM

Yves J. Kemper, Birmingham, Mich., assignor to Vadetec Corporation, Troy, Mich.

Filed Oct. 19, 1978, Ser. No. 952,790

Int. Cl.³ F16H *37/06*

U.S. Cl. 74—682 **12 Claims**



1. In a power transmission system having a system input, a system output and infinitely variable power transmitting means coupling said input and said output to drive said system output at a range of speeds variable in relation to the speed of said system input, said power transmitting means comprising:

first and second I.V. transmission units each having a unit input, a unit output and means for varying the output/input speed ratio infinitely between minimum and maximum values;

means coupling said unit inputs to said system input;

an epicyclic gear train having first and second gear inputs and a gear output;

means coupling said gear output to said system output;

means coupling said unit output of each of said first and second units to said first and second gear inputs, respectively; and

means for independently controlling the speed ratio of each of said first and second units to divide substantially equally between said units, the power transmitted between said system input and system output over a major portion of the range of system output speeds.

4,238,977

BANDSAW GRINDER BLADE SUPPORT

Dulin L. Annas, Rte. 7, Box 511-U, Hickory, N.C. 28601, and Richard M. Teague, Rte. 1, Box 297, Taylorsville, N.C. 28681

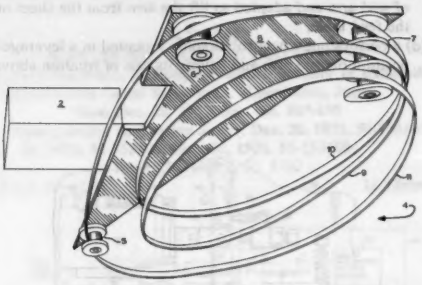
Filed Mar. 29, 1979, Ser. No. 25,013

Int. Cl.³ B23D *63/12*

U.S. Cl. 76—25 R **6 Claims**

1. A bandsaw grinder support means for supporting at least a portion of a bandsaw blade in the vertical position as its teeth are being ground adapted to be used in combination with a means to intermittently advance said bandsaw blade to position same for grinding and a reciprocating grinding means adapted to reciprocate into and out of contact with each saw blade tooth of the bandsaw blade as it is advanced into a grinding position, said support means comprising first, second and third rotatable pulley means, each having a circumferential groove

in their outer periphery, spaced apart one from another and lying in a common plane, adapted to be disposed above and



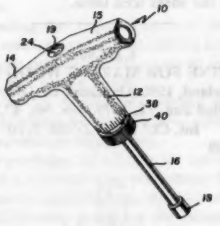
below said advancing and grinding means and said third pulley means having a plurality of grooves in its outer periphery.

4,238,978

TORQUE WRENCH

Richard P. Leone, Wayland, Mass., assignor to Lowell Corporation, Worcester, Mass.

Filed Mar. 16, 1979, Ser. No. 21,087
Int. Cl.[3] B25B *19/00*
U.S. Cl. 81—480 7 Claims



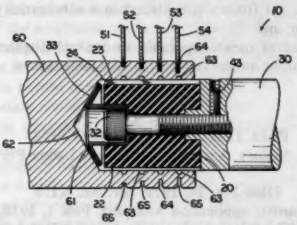
1. A torque wrench comprising;
(a) a housing,
(b) an output shaft within the housing mounted for rotation about its central longitudinal axis,
(c) a clutch cam located within the housing and operatively connected to the output shaft for rotation therewith, said clutch cam having a frusto-conical outer surface, the central longitudinal axis of the output shaft, said clutch cam also having a recessed flat surface that is parallel to said axis,
(d) a clutch ball mounted within the housing for movement toward and away from said flat surface along a line which is substantially transverse to said longitudinal axis,
(e) a spring for resiliently biasing the clutch ball into said recess for driving engagment with the clutch cam, whereby rotation of the housing about said longitudinal axis will cause rotation of the output shaft, said clutch ball being movable out of said recess onto said outer surface against the biasing means for disengagement of the clutch ball cam for a predetermined maximum torque of the output shaft, and
(f) adjusting means for adjustably positioning the clutch cam along its central longitudinal axis and thereby varying the position of the clutch ball along the length of the recess for selectively varying the amount of torque required to move the ball from the recess to said conical surface.

4,238,979

STABILIZING DEVICE FOR HOLLOW WORKPIECES

Arnold R. Jines, 6822 Balmoral Rd., Indianapolis, Ind. 46241

Filed Jul. 25, 1979, Ser. No. 60,395
Int. Cl.[3] B23B *25/00, 23/02, 5/22*
U.S. Cl. 82—38 R 17 Claims



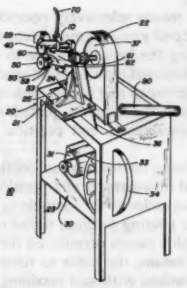
1. A stabilizing device for stabilizing the rotation of a workpiece positioned in a chuck, the workpiece having an inside surface portion defining a hole, said device comprising:
(a) a workpiece engaging member including compressible, elastic material, said material having an outside surface portion adapted to engage the inside surface portion of the workpiece,
(b) means for mounting said workpiece engaging member such that it may freely rotate about the central axis of the chuck, and
(c) means for frictionally coupling the rotation of said workpiece engaging member with the rotation of the chuck, said coupling means including means for axially compressing said material such that said material radially expands to frictionally grip the inside surface portion of the workpiece.

4,238,980

TIRE STRIPPING APPARATUS

Floyd L. Frame, 3035 E Chinden Blvd., Meridian, Id. 83642

Filed Apr. 16, 1979, Ser. No. 30,130
Int. Cl.[3] B23B *3/06, 3/04*
U.S. Cl. 82—54 4 Claims



1. Tire stripping apparatus comprising:
housing means;
drive means mounted on said housing means;
cutting means rotatably mounted on said housing means and drivingly connected to said drive means;
a substantially L-shaped guide member, including a vertically planar portion and a horizontally planar portion, mounted on said housing and operable to guide a tire portion of pre-selected width into said cutting means;
tire feed means rotatably mounted on said housing means and drivingly connected to said drive means, said feed means including two coaxial and horizontally spaced rollers including a first substantially cylindrical roller

located adjacent said guide means and a second roller of substantially frusto-conical shape outwardly spaced from said first roller to define an annular shearing slot operable to receive said cutting means, said second roller operable to force a tire inwardly against the vertical portion of said guide means whereby an angular ring may be cut from a tire placed in a horizontal position and a continuous strip may be cut from a tire placed in a substantially vertical position; and

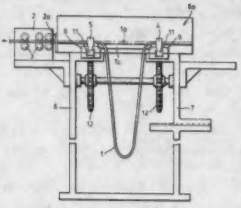
cutter control means operable to control displacement of said cutting means relative to said feed means.

4,238,981

ELECTRIC CABLE PROCESSING

Walter Karl, Sydney, Australia, assignor to Utilux Pty. Limited, Australia

Filed Jan. 24, 1979, Ser. No. 6,179
Claims priority, application Australia, Feb. 1, 1978, PD3213
Int. Cl.[3] B26D *7/06*; H01R *43/04*; B26D *5/00*
U.S. Cl. 83—151 **14 Claims**



1. Apparatus for handling electrical cables comprising:

(a) a supply path for the cable extending from a supply location to a downstream end position,

(b) means for advancing electrical cable substantially in its axial direction along said supply path,

(c) first upstream gripping means and second downstream gripping means positionable at spaced locations along said supply path and selectively operable for gripping respectively a trailing end portion and a leading end portion of a length of cable,

(d) displacement means selectively operable for displacing the first and second gripping means laterally of the supply path for carrying the length of cable to a work station,

(e) guide means disposed between said spaced locations and displaceable relative to said supply path between a guiding position in which the cable is guided as it is advanced toward said downstream end position and a retracted position,

(f) means for retaining the leading end portion of the cable at or adjacent said downstream end position,

(g) retraction means selectively operable to retract the guide means from the guiding position to the retracted position in which the guide means permits, on further operation of the advancing means, the cable to form a loop between said spaced locations with said retaining means retaining the leading end portion of the cable, and

(h) means for severing the length of cable from said supply upstream of the first gripping means.

4,238,982

PROGRAMMABLE PERFORATOR HEAD

Vernon A. Mock, 2250 Linneman, Glenview, Ill. 60025

Filed Jul. 13, 1979, Ser. No. 57,210
Int. Cl.[3] G26F *1/20*
U.S. Cl. 83—332 **3 Claims**

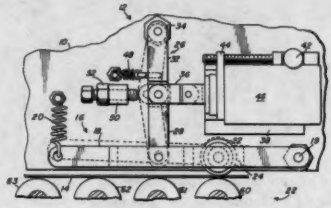
1. A sheet perforator head comprising:

(a) a frame adapted to be mounted above a sheet feed table;

(b) a horizontally-disposed arm pivoted at one end to the frame about an axis perpendicularly disposed to the direction of feed on the sheet feed table;

(c) a return spring operationally connected to the other end of said arm and adapted to lift the arm from the sheet on the feed table;

(d) a perforating wheel rotationally mounted in a leveraged position on said arm and having its axis of rotation above and perpendicularly disposed to the direction of feed on the sheet feed table; and



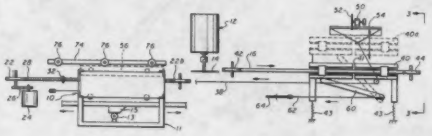
(e) a toggle actuating means mounted on the frame above the arm and operationally connected in leveraged position between a pivot pin on said arm and a pivot means on said frame arranged in perpendicular relation to the direction of feed on the sheet feed table.

4,238,983

MACHINE FOR MAKING WOOD STAKES

Mark Westmoreland, 1500 Alexander Dr., Baytown, Tex. 77520

Filed Jun. 11, 1979, Ser. No. 47,368
Int. Cl.[3] B27B *27/08*, *5/16*
U.S. Cl. 83—408 **11 Claims**



1. A machine for manufacturing wood stakes cut from pre-pointed boards comprising:

a first station, said first station including

a first cutting means for cutting a longitudinal slice of said board,

carriage means for holding a plurality of said boards, being reciprocally movable and having means for sequentially presenting a predetermined width of at least one of said boards to the cutting means for cutting said longitudinal slice as said board is moved longitudinally with respect to said first cutting means,

an endless conveyor having at least one linkage means engagable with said carriage means for moving said carriage means to a position whereby said presented board may be sliced longitudinally by said cutting means and thereafter said linkage means disengages from said carriage means,

means for returning said carriage means to its original position,

a second endless conveyor for receiving said longitudinal slice of board;

a second station, including

a second cutting means, mounted transverse to said second endless conveyor means for bisecting said slice of board,

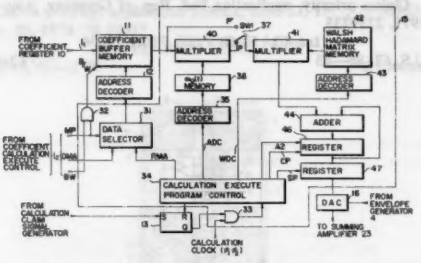
ejection means for ejecting said slice of wood from said second endless conveyor means and for presenting said slice of board to said second cutting means.

4,238,984

ELECTRONIC MUSICAL INSTRUMENT

Hironori Watanabe, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Dec. 20, 1977, Ser. No. 862,430
Claims priority, application Japan, Dec. 20, 1976, 51-153107; Dec. 20, 1976, 51-153108; Dec. 20, 1976, 51-153109
Int. Cl.³ G10H *1/00, 1/02*
U.S. Cl. 84—1.01 **11 Claims**



1. An electronic musical instrument comprising:

a first memory for storing coefficients for a plurality of tones in coded form;

a circuit for reading out required ones of the coefficients from the first memory and for calculating composite coefficients for logic orthogonal functions so as to provide a tone selected by a tone selector;

a second memory for temporarily storing the calculated composite coefficients and sequentially sending them to a plurality of waveshape calculators;

a plurality of waveshape calculators for calculating amplitude values of a required tone waveshape from the composite coefficients supplied from the second memory;

means for intermittently actuating the plurality of waveshape calculators at a frequency which is greater than the musical note frequency corresponding to a key being depressed;

D-A converters for converting to analog form the amplitude values calculated by the waveshape calculators and represented in digital form;

a circuit for producing a musical note having an envelope corresponding to depression and releasing of a key;

an envelope generator having means for switchingly connecting a plurality of capacitive elements to the resistance network on a time shared basis in reply to depression and releasing of a plurality of keys to control charging and discharging of the capacitive elements, thereby forming an envelope, wherein the resistance network is composed of variable resistors for setting an attack speed, a decay speed and a sustain level, respectively, and wherein the connecting means is composed of analog gate circuits, each selecting one of the variable resistors and switching it to another on a time shared basis, and which further includes means for detecting that the envelope has attenuated down to a preset voltage level, and means for indicating an attack level to have reached a predetermined voltage.

2. An electronic musical instrument comprising:

a first memory for storing in digital form a plurality of sets of coefficients of logic orthogonal functions for a plurality of tones;

an adder for adding some of the sets of coefficients selected by a tone selector into a composite set of coefficients;

a second memory for temporarily storing the computed composite set of coefficients; and

waveshape calculating means and calculation request means for calculating the amplitude of a musical note waveshape at one sample point at a frequency calculation rate higher than at least the note frequency and independent of the musical note frequency in response to a request for calculation, the calculating means stopping upon each calculation of the amplitude value and not calculating the amplitude value at the subsequent sample point until the next request for calculation is provided, and in which the musical note period is established by providing the request for calculation repetitively at a rate proportional to the musical note frequency, said calculating means further comprising:

a third memory having a first timing means for sequentially writing therein the coefficients of the second memory and a second timing means for reading therefrom the coefficients for the waveshape amplitude calculation;

a fourth memory for storing n order logic orthogonal functions;

a first multiplier for multiplying data from the third and fourth memories;

means for accumulating a predetermined number of results of multiplication from the first multiplier;

means for producing a signal indicating the completion of the calculation of the waveshape amplitude at one sample point;

a register for holding one already calculated amplitude value while the waveshape calculation is suspended; and

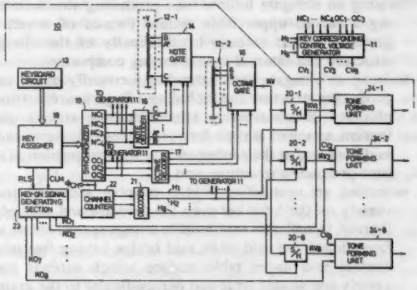
a D-A converter for converting the calculated amplitude value in digital form to an analog quantity.

4,238,985

ELECTRONIC MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 770,718, Feb. 22, 1977, abandoned. This application Sep. 15, 1978, Ser. No. 942,723
Claims priority, application Japan, Feb. 27, 1976, 51/21327
Int. Cl.³ G10H *1/12, 1/18*
U.S. Cl. 84—1.01 **6 Claims**



1. An electronic musical instrument comprising:

a plurality of keys, each key corresponding to a respective musical tone;

means for generating a pitch voltage corresponding to the octave and note of a depressed key, said pitch voltage having a value substantially defining the tone pitch of a musical tone signal corresponding to said depressed key;

means for generating, independently of said pitch voltage, a control voltage having a value assigned to said depressed key which is nondefinitive of said tone pitch;

means for generating the musical tone signal in response to said pitch voltage and including means for modifying such

musical tone elements of said musical tone signal as tone pitch, tone color and tone volume; and

means for directing said control voltage to said musical tone element modifying means to modify at least one of said musical tone elements of the musical tone signal at least partially in accordance with said control voltage, said musical tone element modifying means comprising

means for varying an oscillation frequency of a voltage-controlled type oscillator in response to said control voltage,

means for varying the duty factor of a rectangular wave conversion circuit connected to said voltage-controlled type oscillator in response to said control voltage, and

means for varying cut-off frequencies of a low-pass filter and a high-pass filter connected in series at an output of said rectangular wave conversion circuit in response to said control voltage.

4,238,986

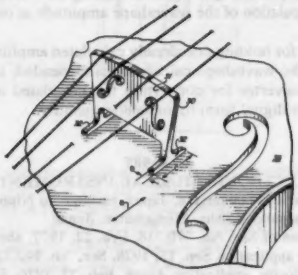
METHOD FOR ALTERING TONAL CHARACTERISTICS OF A STRINGED MUSICAL INSTRUMENT

L. John Twiford, 4640 E. Lewis, Phoenix, Ariz. 85008

Continuation-in-part of Ser. No. 831,236, Sep. 7, 1977, abandoned. This application Feb. 27, 1979, Ser. No. 15,852

Int. Cl.³ G10D *3/04*

U.S. Cl. 84—309 **1 Claim**



1. In a method for constructing a stringed instrument of the violin family including the steps of

forming an elongate hollow tone-producing structure having a curved upper table surface formed of wood, the grain of which extends longitudinally of the elongate structure and internal tone-affecting components

forming an elongate neck extending forwardly of the tone-producing structure and including a fingerboard portion, a plurality of transversely spaced tunable strings under tension, attached at their forward ends to the outer end of said neck and at their other ends to the rear portion of said tone-producing structure, and

mounting an upstanding bridge member mounted transversely on the table between the forward and rear edges thereof, to maintain said tunable strings spaced above said fingerboard and said table, said bridge having feet which contact said upper table surface which extends transversely across said table and perpendicular to the grain of the wood from which said table is formed

the improvement whereby the tonal characteristics of said instrument are altered without structural modifications to said tone-producing structure, comprising the steps of:

(a) removing said bridge member having said transversely extending feet;

(b) increasing the sonority, projection and bombastic tonal qualities of said instrument without modification of said tone-producing structure, by fitting said instrument with a bridge which includes a pair of symmetrical elongate feet formed integrally therewith, forming the contact between the bridge and the table of said instrument, said feet having bottom surfaces extending at right angles to said bridge in directions substantially parallel to the grain of the wood from which said table is formed and shaped, contoured and dimensioned to continuously contact said curved table along lines which are longer than the width of said feet; and

(c) maintaining said tone-producing structure and said internal components in their original condition.

4,238,987

EXPANSION DOWEL FOR SPACED MOUNTING OF PARTS ON A SUPPORT STRUCTURE

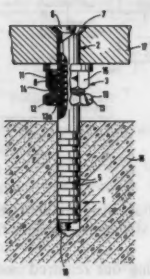
Gerd Siebrecht-Reuter, Deutenhausen, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 25, 1978, Ser. No. 936,919

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739235

Int. Cl.³ E04B *1/38*; F16B *13/04*

U.S. Cl. 85—83 **7 Claims**



1. Expansion dowel assembly for insertion into a bore hole in a support structure for supporting a part in spaced relation from the support structure, comprising an axially elongated sleeve-like expansion member arranged to be inserted into a bore hole and having a front end inserted first into the bore hole and a rear end, said sleeve-like expansion member having a first axially extending portion extending from the front end thereof for a part of the axial length thereof, said first portion arranged to be inserted into and expanded into holding contact with the surface of the bore hole, and a second axially extending portion extending from the rear end of said expansion member for a part of the axial length thereof toward said first portion and arranged to project outwardly from the bore hole, means for expanding said first portion, a stop member secured on said second portion and movably adjustable thereon in the axial direction thereof for holding a part on said second portion between said stop member and the rear end of said expansion member, wherein the improvement comprises that said stop member includes a locking member axially displaceable along and securable to said second portion, and a supporting member mounted on said locking member and being axially adjustable in the direction between said locking member and the rear end of said expansion member so that a part can be supported against said supporting member on the rear end side thereof and held in spaced relation to the support structure containing the bore hole, said supporting member is annularly shaped and is disposed in threaded engagement with said locking member, said locking member is annular in shape and has an inner surface, at least one elastic lug secured to and extending inwardly from the inner surface of said locking member and being displaceably engageable with said second portion for securing said stop member thereon, said second portion of said expansion member has at least one rack formed therein with said rack extending in the axial direction of said expansion member, said rack having a number of teeth spaced apart in the axial direction of said expansion member and said teeth extending transversely of the axial direction of said expansion member

and for only a portion of the circumferential periphery of said expansion member, and said lug on said locking member arranged to interengage in said rack in the space between two adjacent said teeth thereof, and said locking member being rotatable relative to said expansion member so that said lug can be displaced by the rotation movement out of interengagement said rack.

4,238,988

DEVICE FOR RECEIVING AND HANDLING PROPELLANT POWDERS

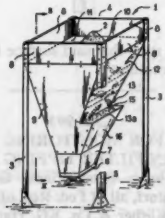
Pierre Fontaine, Paris, France, assignor to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 18, 1978, Ser. No. 970,141

Claims priority, application France, Dec. 23, 1977, 77 38952; Nov. 20, 1978, 78 32613

Int. Cl.³ F42B *33/00, 37/00*

U.S. Cl. 86—1 R **9 Claims**



1. Device for receiving or handling a propellant powder, possessing an upper charging orifice for the powder, which comprises a side vent possessing means for preventing the powder from escaping through this vent, and a portion in the side wall of the device, which is located approximately between the vent and the charging orifice, made of a material which can be detroyed under the conjugate action of the pressure applied by the powder and the flames generated on the outside of the device near this zone.

4,238,989

DEVICE FOR FEEDING CHANNEL FOR AMMUNITION FOR AUTOMATIC GUN

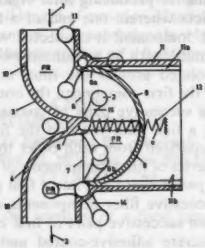
Bertil Bredin, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 17, 1978, Ser. No. 952,226

Claims priority, application Sweden, Oct. 26, 1977, 7712031

Int. Cl.³ F41D *10/38*

U.S. Cl. 89—33 BB **14 Claims**



1. Apparatus for feeding ammunition in an automatic gun of the type having a magazine and a feeding channel extending between the magazine and the gun, said feeding channel having an inner wall, said apparatus comprising:

first and second curved sections provided in said feeding channel, each section having a mouth;

guide wall means extending across said mouths, said guide means comprising a curved inner surface, said inner surface constituting an extension of the inner wall of said feeding channel;

means supporting said guide wall means for permitting said guide wall means to be displaced away from and toward said mouths, said supporting means comprising a supporting surface extending between said mouths and said guide wall means, the length of said supporting surface being dependent upon the degree of displacement of said guide wall means from said mouths.

4,238,990

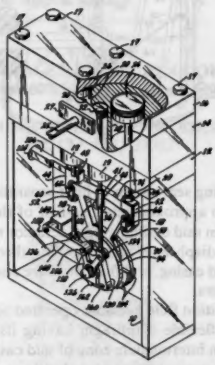
RECIPROCATING ENGINE WITH IMPROVED POWER OUTPUT LINKAGE

John H. Hedger, P.O. Box 357, Lakeside, Calif. 92040

Filed Dec. 18, 1978, Ser. No. 970,448

Int. Cl.³ F01B *1/00*; F01L *31/00*

U.S. Cl. 91—186 **2 Claims**



1. In a fluid driven reciprocating engine which comprises an engine block containing at least two parallel cylinders, a piston located in each of said cylinders for parallel reciprocating movement therein, piston rods rigidly connected at one end to each of said pistons extending out of said cylinders along the cylinder centerlines into a housing containing connecting means operatively connecting the other end of each of said piston rods to a single crank pin on a rotary output shaft, and valve means within said block for selectively supplying fluid to and exhausting fluid from said cylinders above and below said pistons, the improvement wherein said connecting means is a single rigid plate having an approximately isosceles triangle configuration, with an opening surrounding said crank pin at the apex and flexible connecting means at each of the other corners for connection to said other end of said piston rods, said other piston rod ends have a roughly "C" shaped configuration partially surrounding said plate corners and flat links having spaced apart holes to connect between bolts in holes in said corners and bolts in said other piston rod ends, said links lying along lines substantially parallel to said piston rods.

4,238,991

THREE-POSITION ACTUATOR

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

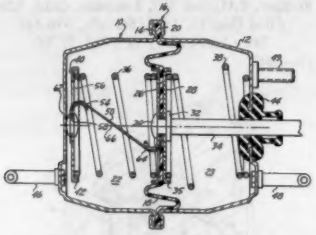
Filed Jan. 5, 1979, Ser. No. 1,057

Int. Cl.³ F01B *11/02*

U.S. Cl. 92—85 A **18 Claims**

1. A three position fluid pressure operated actuator comprising a casing, a single flexible diaphragm in said casing having

its periphery connected around a zone intermediate the ends of said casing and dividing the interior of said casing to a pair of pressure chambers, flat plate means connected to the central portion of said diaphragm leaving a flexible annular portion between said plate means and the periphery of said diaphragm, said plate means providing spring seats at opposite sides of said diaphragm, a first compression spring in one of said chambers connected between one end of said casing and the adjacent spring seat urging said plate means in a first direction, spring means in said other chamber comprising a floating spring seat movable therein between a position at the other end of said casing and a position spaced inwardly therefrom, a compression spring acting between said floating spring seat and the spring seat connected to the adjacent side of said diaphragm, connector means comprising a single flexible non-resilient strap connected between said last mentioned spring seat and



said floating spring seat acting to limit separation between said seat and plate to approximately one-half of the total travel of said diaphragm in said casing, a rigid actuator rod connected at one end to said diaphragm and extending through an opening at one end of said casing, and fluid pressure connections to said pressure chambers.

6. A three position fluid pressure operated actuator comprising a casing, a flexible diaphragm having its periphery connected around an intermediate zone of said casing and dividing said casing into separate pressure chambers, said diaphragm having a flat rigid plate connected to the central portion thereof, a spring seat movable in said casing toward and away from said plate, a spring interposed between said seat and said plate, a single flexible non-resilient strap connected at its end portions to central portions of said seat and plate to limit separation therebetween while permitting substantially free relative movement therebetween into substantial juxtaposition.

4,238,992

PUMP DIAPHRAGM

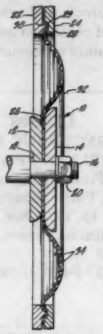
Alan D. Tuck, Jr., Upland, Calif., assignor to Wilden Pump & Engineering Co., Colton, Calif.

Filed Oct. 30, 1978, Ser. No. 956,189

Int. Cl.³ F16J *3/02*

U.S. Cl. 92—103.5 D **4 Claims**

1. A diaphragm including an inner attachment portion, an outer attachment portion and a sheet-like, annular flexure portion made of a synthetic resin polymer bounded by said inner and outer attachment portions and having a concaved, fluid pressure receiving side, wherein the improvement comprises concentric, continuous ribs spaced substantially uniformly across the width of said fluid pressure receiving side of



said flexure portion such that said surface is substantially sinusoidal in a radial direction.

4,238,993

APPARATUS FOR MONITORING FILTER ROD SECTIONS IN FILTER TIPPING MACHINES

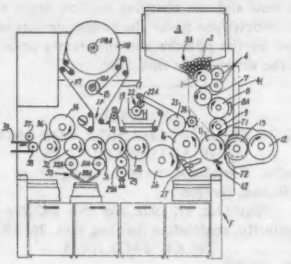
Peter Brand, Hamburg; Peter Pinck, Gross-Hansdorf, and Anton Baier, Wentorf, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,696

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742856

Int. Cl.³ B31C *11/00*

U.S. Cl. 131—21 R **13 Claims**



1. In a machine for producing filter cigarettes or analogous smokers' products wherein one end of a tobacco-containing first rod-shaped component is connected with a coaxial filter component of unit length by an adhesive-coated uniting band which is convoluted around the filter component and the adjacent end of the first component, the combination of means for transporting successive pairs of coaxial first components sideways along a first path wherein the first components of each pair are separated from each other by a gap; means for transporting a series of filter components of double unit length along a second path toward and into a first portion of said first path so that successive filter components of said series enter the gaps between successive pairs of first components; means for draping discrete adhesive-coated uniting bands around successive filter components of double unit length and the adjacent ends of corresponding pairs of first components in a second portion of said first path; means for monitoring said second path ahead of said second portion of said first path, including means for generating signals in response to detection of the absence of filter components of double unit length; and

means for moving the first components of the corresponding pairs axially toward each other in response to said signals and ahead of said second portion of said first path.

4,238,994

METHOD AND APPARATUS FOR MONITORING AND CONTROLLING THE PRODUCTION OF COMPOSITE FILTER MOUTHPIECES FOR CIGARETTES OR THE LIKE

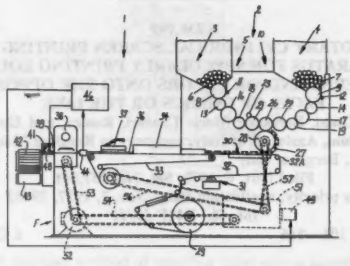
Friedo Koch, Wohltorf, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,240

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1978, 2806552

Int. Cl.³ A24C 5/50

U.S. Cl. 493—4 **22 Claims**



1. A method of producing and controlling the production of composite mouthpieces for use in the manufacture of filter cigarettes or the like, comprising the steps of assembling a continuous filter rod consisting of several types of alternating dissimilar filler rod sections which absorb radiation to a different degree; conveying the filler rod lengthwise along a predetermined path; draping the filler rod into a web of wrapping material to form a filter rod wherein the web constitutes a tube surrounding the filler rod; directing a beam of radiation against one of said rods in a first portion of said path whereby different types of sections absorb radiation to a different degree; monitoring the characteristics of said beam subsequent to impingement upon said one rod and generating first signals in response to changes of such characteristics; generating second signals in response to movement of successive unit lengths of sections of at least one type along said path, each unit length being a small fraction of the overall length of a section of satisfactory length; and counting the number of second signals which are generated subsequent to the generation of a first signal.

4,238,995

TOASTER CONTROL

Louis S. Polster, 1017 Fairmount Rd., Burbank, Calif. 91501

Filed May 30, 1978, Ser. No. 910,195

Int. Cl.³ A47J 27/62

U.S. Cl. 99—331 **5 Claims**

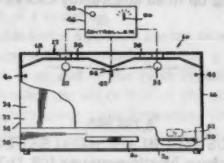
1. A toaster for the cooking of a food item, said toaster comprising:

a housing;

a support surface for supporting a food item to be cooked within said housing;

an elongated quartz-iodide lamp in said housing spaced from and parallel to said support surface; and

an elongated temperature-resistance transducer in the form of a probe positioned within said housing, said transducer being coextensive with and parallel to said lamp for sensing the heat energy from both the ambient temperature within said housing and the radiance of said lamp for producing a signal corresponding to said heat energy; and



control means operatively connected to said lamp and to said transducer for turning off said lamp at a predetermined time when the heat energy of both the ambient temperature within said housing and also the radiance of said lamp have been sufficient to cook a food item supported on said support surface.

4,238,996

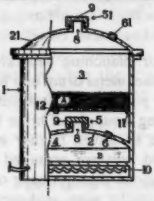
TWO-STAGED PRESSURE COOKER

Muneaki Okuyama, 60-13 Ohyama Higashicho, Itabashi Ku, Tokyo, Japan

Filed Sep. 27, 1977, Ser. No. 837,352

Int. Cl.³ A47J 37/12

U.S. Cl. 99—352 **9 Claims**



1. A two-staged pressure cooking apparatus comprising:

a vessel having a closed bottom and an open top;

upper lid means removably sealed onto said vessel for closing said top thereof and for sealing the interior of said vessel in a pressure-tight manner;

lower lid means positioned within said vessel and extending across said vessel at a location for dividing said interior of said vessel into a lower chamber to receive therein water and an upper chamber separate from said lower chamber and to contain food to be cooked;

heating means mounted adjacent said lower chamber, for heating, water contained therein to its boiling point, thereby generating steam, the pressure of which builds up in said lower chamber;

first pressure regulating means in said lower lid means for, when the pressure of said steam in said lower chamber builds up to a predetermined level, passing said steam from said lower chamber through said lower lid means and into said upper chamber, whereby food in said upper chamber will be cooked by said steam;

first safety relief valve means, in said lower lid means at a position spaced from said first pressure regulating means, for preventing said pressure in said lower chamber from building up to an abnormally excessive and dangerous level;

second pressure regulating means in said upper lid means for, when the pressure of said steam in said upper chamber

builds up to a predetermined level, venting said steam from said upper chamber through said upper lid means to the atmosphere; and

second safety relief valve means, in said upper lid means at a position spaced from said second pressure regulating means, for preventing said pressure in said upper chamber from building up to an abnormally excessive and dangerous level.

4,238,997

APPARATUS FOR BLANCHING SAUERKRAUT

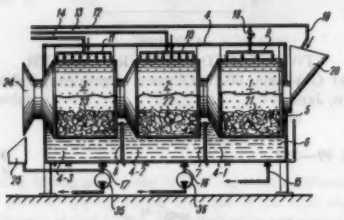
Eckhart Hengstenberg, Mettingerstrasse 109, D-7300 Esslingen, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,281

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844430

Int. Cl.³ A23B 7/06

U.S. Cl. 99—483 **5 Claims**



1. An apparatus for blanching sauerkraut comprising, a rotatable perforated sheet metal drum unit having an inlet zone and an outlet zone for passage of sauerkraut therethrough and a receptacle for holding a supply of brine through which the sauerkraut is arranged to travel, further wherein a series of drums comprising said unit are arranged seriatim with the sauerkraut being advanced through each of said drums from said inlet zone to said outlet zone, said receptacle being positioned to provide spaced areas for said brine and within which each said drum unit can rotate, heating apparatus for said brine and flow control means to supply heated brine from said drum in said oulet zone to the next adjacent drum in succession.

4,238,998

METHODS OF PORTIONING AND PORTIONING MACHINES

Michael T. A. Herring, 51 Longell Hills, Costessey, Norwich, and Richard Knight, 54 Church St., Deeping St. James, both of England

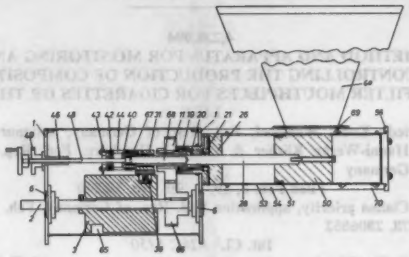
Filed Jan. 18, 1979, Ser. No. 4,379

Claims priority, application United Kingdom, Jan. 24, 1978, 2770/78

Int. Cl.³ B30B 11/22

U.S. Cl. 100—41 **22 Claims**

1. A method of portioning a compressible viscous material such as a food product comprising introducing an unmeasured quantity of the material into a cylindrical chamber having piston means therein, compacting said material to a predetermined density in the chamber by said piston means and then discharging a predetermined portion of the compacted material from the chamber by opening an extrusion orifice communicating with the chamber, applying extrusion pressure to the material in the chamber by said piston means and reducing the volume of the chamber by a predetermined amount which is substantially less than the original volume of the chamber to



extrude the predetermined portion of the compacted material through said extrusion orifice.

4,238,999

ROTARY CYLINDRICAL SCREEN PRINTING APPARATUS FOR SPECULARLY PRINTING EQUAL PATTERNS AND/OR COLORS ONTO THE OPPOSITE FACES OF FABRICS OR THE LIKE

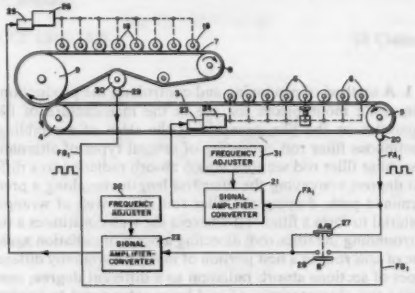
Adolfo Giani, Bergamo; Mario Panseri, Ranica, and Umberto Mascioni, Azzio, all of Italy, assignors to Reggiani Macchine S.p.A., Bergano, Italy

Filed Nov. 6, 1978, Ser. No. 957,841

Claims priority, application Italy, Nov. 7, 1977, 29402 A77

Int. Cl.³ B41F 15/12

U.S. Cl. 101—116 **6 Claims**



1. A rotary cylindrical-screen printing apparatus for specularly printing equal patterns or colors onto the opposite faces of a fabric comprising: first and second rotary cylindrical screen printing machines of the type having a carrier belt and transmission roller for supporting and moving fabric with respect to a printing roller, said machines being connected with each other, said first machine being supported above said second machine;

means for feeding said fabric to said second machine, whereby printing on one face occurs;

means for feeding printed fabric exiting said second machine to said first machine whereby the opposite face of the fabric is printed;

said upper machine transmission roller having a diameter equal to at least twice the diameter of the transmission roller of the underlying machine;

means for synchronizing the speeds of the printing rollers of the two machines, including a transducer means interlocked to the speed of the belt of one machine, having an outgoing frequency signal sent to first and second electrohydraulic motors for controlling the printing rollers of each machine; and

means for synchronizing the speed and phase of the two belts by interlocking the speed of the belt of one machine with the speed of the other belt comprising digital-analog converter means for effecting a comparison between the speeds of the two belts so as to emit an outgoing signal for the correction of speed and synchronization; and

means for controlling the speed of each belt in response to said outgoing signal whereby said belts are synchronized.

4,239,000

SELECTIVELY BLOCKED MATRIX-FORM STENCIL AND METHOD OF USE

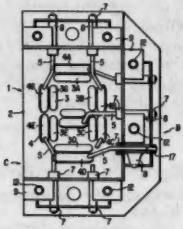
Sinya Takeuchi, Kobe, Japan, assignor to Kobe Steel, Limited, Kobe, Japan

Filed Jun. 28, 1978, Ser. No. 919,919

Claims priority, application Japan, Jul. 5, 1977, 52-80729; Jul. 5, 1977, 52-80730

Int. Cl.³ B41M *1/12*

U.S. Cl. 101—129 **9 Claims**



1. A marking method of spraying paint onto a material to be marked through a stencil having a group of separate openings arranged in an optional pattern to form a predetermined character, said character comprising a single independently meaningful symbol, at least some of said openings not individually forming independently meaningful symbols, said method comprising the steps of:

positioning a paint spray source in operative relation to said openings;

positioning said stencil between said source of spray paint and said material;

utilizing plate means to close all of said openings not needed to form said character to be marked; and

forming said character by spraying said paint adjacent said stencil for a finite period of time;

whereby said material is not marked through those openings which are closed.

4,239,001

MULTICOLOR ROTOGRAVURE PRINTING SYSTEM

Hiroshi Kataoka, 5-8, Asahi 1-chome, Iyomishimak-shi, Ehime-ken, Japan

Continuation-in-part of Ser. No. 871,632, Jan. 23, 1978, abandoned. This application Mar. 12, 1979, Ser. No. 19,834

Claims priority, application Japan, Sep. 14, 1977, 52-109927

Int. Cl.³ B41F *9/02, 9/18, 13/40*

U.S. Cl. 101—152 **6 Claims**

1. A multicolor rotogravure printing system comprising

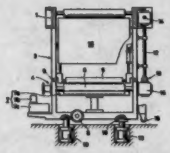
(a) a main frame comprised essentially of an elongated support beam means having two ends and of sufficient length to accommodate a plurality of printing stations side-by-side, and two legs fixedly supporting the support beam means at the two ends;

(b) a rotary main drive shaft extending over the length of the support beam means for providing rotational motion; and

(c) a monochromatic printing unit at each one of the printing stations, each printing unit including

(1) an upper structure having a lower surface, the upper structure being fixedly suspended from the elongated support beam means of the main frame and comprising an impression roll mounted at a fixed distance from the beam means, a drier, a series of sheet guide rollers, a first positioner means on the lower surface of the upper structure, and a vertical drive shaft having one end coupled to the main drive shaft and receiving the rotational motion therefrom and an opposite end carrying one half of a coupling,

(2) a movable lower structure having an upper surface and comprising a plate cylinder having a rotatable axle, a gear box at an end of the plate cylinder axle, the gear box including the other half of the coupling, the coupling halves being complementary and being engageable with each other for transmitting the rotational



motion to the plate cylinder axle, an inking device, wheels for moving the lower structure away from the upper structure, and second positioner means on the upper surface of the lower structure, the first and second positioner means being complementary, and

(3) vertical motion means mounted at each printing station below the lower structure and arranged for raising the lower structure into engagement with the upper structure, said engagement including engagement of the first and second positioner means and of the coupling halves whereby the printing system is put in condition for operation upon moving the lower structure into the printing station and actuating the vertical motion means.

4,239,002

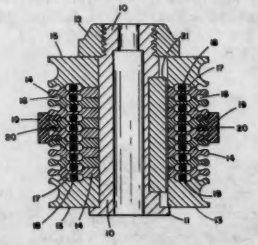
PRINTING CODER

David Rosenstein, 2808 Zarthan Ave. S., Minneapolis, Minn. 55416

Filed Jun. 4, 1979, Ser. No. 44,864

Int. Cl.³ B41F *27/06*

U.S. Cl. 101—377 **6 Claims**



1. A magazine for holding printing type on a cylindrical coder, comprising:

a. a plurality of coaxially stacked equal diameter discs having spaces at their outer edges between adjacent discs for receiving the backing ribs of a print type;

b. means located radially inward between adjacent discs for yieldably urging the discs apart axially; and

c. means for axially releasably compacting the discs together to compress said yieldable means whereby the discs se-

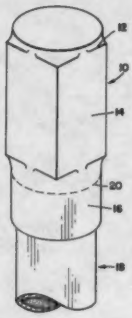
curely grasp the inserted type backing ribs at the outer edges of the discs.

4,239,003

METHOD FOR TRANSMITTING DETONATION AT A SHARP ANGLE

Jacob Savitt, Capitola, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1978, Ser. No. 933,327
Int. Cl.³ C06C *5/06*
U.S. Cl. 102—27 R **3 Claims**



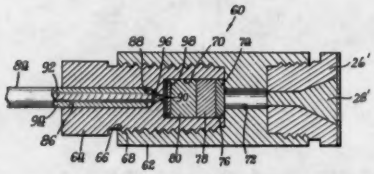
1. A method for transmitting detonations at a sharp angle in either direction comprising the step of shaping a donor and an acceptor end tip to a configuration such that when placed in contact with each other said donor and acceptor end tips are in planar contact, said shaping step being accomplished by:
(a) placing a cylindrical end tip cup in a die having a cavity of said configuration;
(b) loading an explosive into said cup; and
(c) applying a force to said explosive sufficient to deform the walls of said cup against the walls of said die.

4,239,004

DELAY DETONATOR DEVICE

Edward A. Day, Rancho Santa Fe, Calif.; Glenn E. Seay, Los Alamos, N. Mex., and Perry B. Ritter, Encinitas, Calif., assignors to Systems, Science & Software, LaJolla, Calif.

Division of Ser. No. 703,601, Jul. 8, 1976, Pat. No. 4,144,814.
This application Feb. 12, 1979, Ser. No. 11,150
Int. Cl.³ F42B *3/12*; F42C *19/12*
U.S. Cl. 102—28 R **22 Claims**



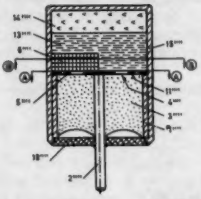
1. A delay detonating device comprising:
a generally cylindrical body having a chamber therewithin, a first bore extending from a first end of said chamber, said first bore diameter being smaller than the diameter of said chamber so as to define a generally annular shoulder at the first end of said chamber, the second end communicating with a second bore through a small aperture, the diameter of said aperture being substantially smaller than the diameter of said bore and of said chamber;
an impactor disk positioned within said chamber abutting said shoulder adjacent said first bore and covering the same, said impactor disk having a thickness and being of a material that results in the central portion inside of said shoulder being sheared and accelerated down said first bore toward the far end thereof as a unitary piece, the thickness substantially preventing tumbling of the central portion during travel to prevent escape of explosive gases between the central portion and the wall of said first bore;
a charge of secondary type explosive being located adjacent said impactor disk within said chamber;
a charge of a delay mixture being positioned adjacent said donor secondary explosive within said chamber, said delay mixture having a slow burning rate so that initiation of burning at one end produces a predetermined time delay before the opposite end is burned, the burning thereof being substantially non-gassing so as to not appreciably affect the pressure within said chamber;
a valve means overlying said aperture and spaced a small distance therefrom; and,
a charge of secondary explosive located within said aperture extending at least partially into said second bore and under said valve means so as to hold the valve means a small distance away from the aperture.

4,239,005

DEVICE FOR AN ELECTRIC IGNITER

Björn Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Apr. 11, 1978, Ser. No. 895,406
Claims priority, application Sweden, Apr. 19, 1977, 7704436
Int. Cl.³ F42C *11/00*
U.S. Cl. 102—28 R **3 Claims**



1. Electric ignition apparatus for igniting a pyrotechnical ignition charge at particular time delays corresponding to input triggering voltages, comprising:
electrically conducting container means for containing said ignition charge and for defining a closed, pressurized ignition area;
support means having an outer electrically conducting shell unit disposed within said container means and in electrical contact with said container means, said support means having an end support portion and an electrode unit positioned in an insulated, spaced relation to said shell unit within said container means, the electrode unit extending outside said container means to receive said input triggering voltages;
a first heating element means and a second heating element means connected in series and supported on the end support portion of said support means, the first heating element means electrically connected to said electrode unit and the second heating element means electrically connected to said outer conducting shell, said first heating element means dimensioned to heat to an ignition temperature in response to at least a first level of applied input triggering voltage and said second heating element means disposed adjacent at least a portion of said ignition charge and dimensioned to heat to an ignition temperature to

ignite the ignition charge in response to at least a second higher level of applied input triggering voltage, and

at least one pyrotechnical delay means positioned adjacent said first heating element means at one end and adjacent at least a portion of said ignition charge at another end, said delay means burning at a particular rate after being ignited by said first heating element and igniting said ignition charge after a time delay defined by the dimensions of said delay means.

4,239,006

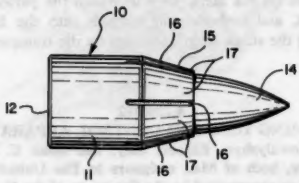
SELF LUBRICATING SABOT

Richard D. Kelson, 6074 Wending La., Hunter, Utah 84120

Filed Jul. 27, 1978, Ser. No. 928,512

Int. Cl.³ F42B *13/16*

U.S. Cl. 102—93 **6 Claims**



1. A unitary one piece plastic sabot for projection through a rifled gun barrel which sabot is constructed from a nylon resin having dispersed particles of a solid lubricant throughout, said sabot consisting of a cylindrical sleeve having a back imperforate closed end and an open forward end defining a cylindrical projectile cavity said sleeve tapering gradually inwardly from a predetermined point on said sleeve to the forward end thereof and containing a plurality of equidistantly radially spaced slots extending axially from said open forward end a predetermined distance, said distance being less than the length of the cavity and at least as great as the lengths of the tapered portion of the sleeve.

4,239,007

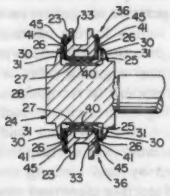
RAILWAY TRUCK PEDESTAL LINER

Donald L. Kleykamp, Springboro, and Peter J. Neroni, Dayton, both of Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 13, 1979, Ser. No. 30,036

Int. Cl.³ B61F *5/32*; F16C *27/02, 33/20, 33/24*

U.S. Cl. 105—225 **10 Claims**



1. In a pedestal liner for a railway vehicle wherein said vehicle comprises; pedestal trucks comprising pairs of pedestal legs and a journal box disposed between each pair of pedestal legs, each journal box having a vertically disposed planar central guide surface and a pair of spaced vertically disposed parallel side surfaces disposed on opposite sides of said guide surface; said pedestal liner being roughly U-shaped having a bight and a pair of parallel legs and being for disposal between an associated pedestal leg and journal box and comprising a continuous uninterrupted metal backing material defining said bight and parallel legs; the improvement comprising, a first antifriction material for said bight supported by said backing material and adapted to engage said guide surface, a second antifriction material for said parallel legs supported by said backing material and adapted to engage said side surfaces, said backing material providing optimum structural support for said antifriction materials, and said first and second antifriction materials being polymeric materials having different wear characteristics.

4,239,008

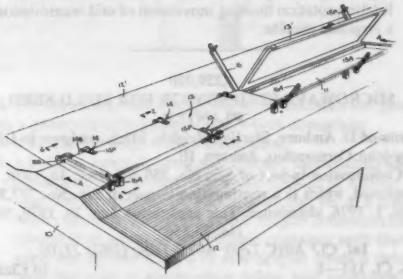
LIGHTWEIGHT RAILWAY CAR HATCH COVER

Edward B. Conlon, Garnerville, N.Y., assignor to Baltek Corporation, Northvale, N.J.

Filed Oct. 17, 1978, Ser. No. 952,100

Int. Cl.³ B61D *7/00, 17/16, 39/00*

U.S. Cl. 105—377 **7 Claims**



1. A set of at least two light-weight covers of high strength and rigidity adapted to sealably close a rectangular hatch in the wall of a structure such as a railway hopper car having a walkway on each side of the hatch, said hatch having a coaming running along its perimeter, each cover closing a respective portion of the hatch and comprising:

(A) an end grain balsa wood core panel, the edges of the panel having a plurality of longitudinally extending cuts extending partially therein to permit rolling of the edges;

(B) thin inner and outer skins bonded to the faces of the panel and covering the edges thereof to form a sandwich laminate of high rigidity, structural strength and providing thermal insulation;

(C) compressible gaskets secured to the underside of the laminate adjacent the edges thereof to engage and press against the coaming to seal said hatch, the edges of the laminate being in a rolled formation to define canopies which protectively shield the coaming and the gaskets;

(D) means hinging the cover to one side of the structure; and

(E) means latching the cover to the other side of the structure.

4,239,009

PORTABLE TURNTABLE FOR MICROWAVE OVEN

Emmett M. Cunningham, Alexandria, Va., assignor to Plastics, Inc., St. Paul, Minn.

Continuation of Ser. No. 908,087, May 22, 1978. This application Aug. 29, 1979, Ser. No. 70,746

Int. Cl.³ A47B *11/00, 85/00*

U.S. Cl. 108—20 **15 Claims**

15. A portable self-contained turntable for rotating foodstuffs in a microwave oven cavity comprising:

a base for engaging a load supporting surface in the oven cavity;

a table for receiving foodstuffs, said table being rotatably mounted on said base; and

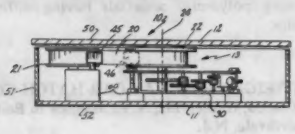
drive means mounted on said portable self-contained turntable for rotatably driving said table from within the oven cavity, said drive means comprising:

an energy storing spring;

a spring storage reel, said spring being stored on said storage wheel;

an output reel mounted on said turntable; and

an escapement mechanism connected to said output reel, said escapement comprising:



a gear step-up transmission; and

means for limiting the rotation of said transmission and thus regulating the speed of said turntable, said means for limiting rotation limiting movement of said transmission to a step-like motion.

4,239,010

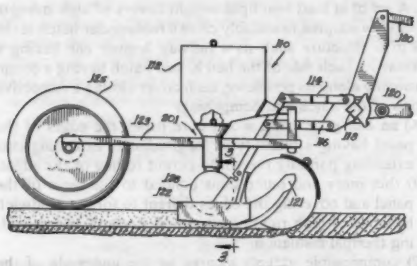
MICROWAVE SEED SENSOR FOR FIELD SEED PLANTER

Raymond D. Amburn, Sterling Heights, Mich., assignor to Dickey-john Corporation, Auburn, Ill.

Continuation-in-part of Ser. No. 750,309, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 737,298, Nov. 1, 1976, abandoned. This application Jun. 29, 1979, Ser. No. 53,556

Int. Cl.³ A01C *1/00*; A01G *7/04*; G08B *21/00*

U.S. Cl. 111—1 **10 Claims**



1. In a seed planter including a seed hopper for containing a supply of seeds, said seed hopper having a seed outlet, seed delivery means connected with said seed outlet for delivering seeds therefrom to the ground to be planted, and means connected with said seed delivery means for sensing seeds being delivered thereby and providing signal means in response thereto, wherein said last-mentioned means comprise: means forming a confined path of travel for seeds, a source of microwave energy positioned for directing microwave energy in said confined path of travel for seeds, means for substantially confining microwave energy to a predetermined portion of said confined path of travel and said microwave source including microwave detector means for detecting a disturbance in said microwave energy due to the passage of a seed along said predetermined portion of said confined path of travel to provide said signal means.

4,239,011

NEEDLEPOINT EMBROIDERING METHOD

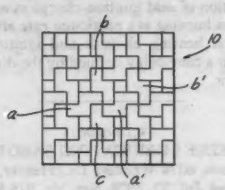
Diane M. Schultz, P. O. Box 9742, Glendale, Calif. 91208

Filed Feb. 21, 1979, Ser. No. 13,619

Int. Cl.³ D05C *3/00*

U.S. Cl. 112—266.1 **5 Claims**

1. A method of transferring a repetitive pattern from a source to a mesh fabric base including the steps of applying stitch length tracings of said pattern to a transparent sheet which has delineated thereon a grid of the same mesh size as said fabric base, aligning the grid of said transparent sheet with



the mesh of said fabric base with the traced pattern overlying the location on the fabric base to which the pattern is to be transfe.red, and embroidering threads into the fabric base underlying the stitch length tracings on the transparent sheet.

4,239,012

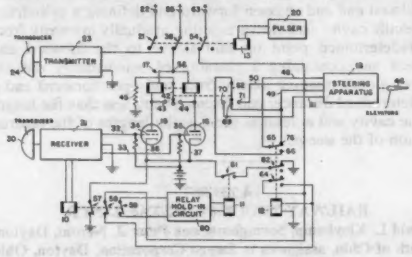
HOMING TORPEDO CONTROL APPARATUS

Stephen Kowalyshyn, Ellicott City, and John C. Voorhees, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 15, 1960, Ser. No. 76,080

Int. Cl.³ F42B *19/01, 19/06*

U.S. Cl. 114—23 **2 Claims**



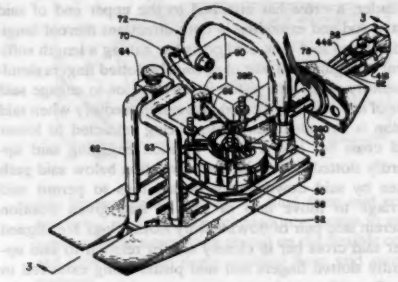
2. In an echo-ranging torpedo wherein spurious and true-target echo signals may be received in the listening periods between repetitive search-pulse transmission instants, in combination: a receiver operative to convert received echo signals to steering command signals having characteristics corresponding to echo-source direction, said receiver including a target-recognition circuit and a gating relay which operates, with inherent delay, in response to recognition of each true-target echo signal; a steering control circuit, including steering relay and switch means, adapted to place said steering relay and switch means in a condition corresponding to echo-source direction as derived by said steering control circuit, when operative, from said steering command signals; means applying said steering command signals to said steering control circuit; means controlled by operation of said gating relay, in response to each reception and recognition of a true-target echo signal, to render said steering control circuit operative to respond to steering command signals stemming from subsequent echo signals during a predetermined interval, of the order of a few listening periods, following each said reception and recognition of a true-target echo signal, and steering apparatus responsive, when rendered effective, to said steering relay and switch means condition; said gating relay, when operated, controlling said steering apparatus to render it effective to respond to said steering relay and switch means condition.

4,239,013

PROPELLING MEANS

Hendrick W. Haynes, P.O. Box 66152, Seattle, Wash. 98166

Continuation-in-part of Ser. No. 691,448, Jun. 1, 1976, abandoned. This application Oct. 21, 1977, Ser. No. 844,215
Int. Cl.³ B63H 21/00
U.S. Cl. 440—40 21 Claims



1. A combination of a boat and a boat propelling means, with a motor having a motor drive shaft, said combination comprising:

an impeller housing having a hollow chamber therein, said housing being adapted to fit into the bottom of the boat, wherein said housing includes inlet and outlet passageways which communicate with said hollow chamber;

a heat exchanger located beneath the bottom of the boat for cooling motor fluid, a portion of said heat exchanger being in contact with said impeller housing, said heat exchanger having an opening therethrough which connects with the inlet passageway in said impeller housing, so as to allow fluid to enter into said hollow chamber;

an impeller mounted in said hollow chamber in such a manner that, when said impeller is rotated, fluid entering the inlet passageway in said impeller housing is forced through said outlet passageway, thereby resulting in propulsion of the boat; and

coupling means transmitting the rotation of the motor drive shaft to said impeller.

20. Combined control means for steering a vehicle and controlling the operation of a motor, comprising:

a control shaft mounted for in and out movement and for rotational movement;

first means on said control shaft for receiving a steering line connected to a vehicle steering assembly, wherein when the steering line is operatively connected to said receiving means, the vehicle may be steered by rotation of said shaft;

a motor control lever mounted in a predetermined relationship with said control shaft and further mounted to be rotatable about a fixed point, said motor control lever including means for receiving a motor control line, wherein when the motor control line is operatively connected to said motor control lever, rotation of said motor control lever results in a change in motor speed; and

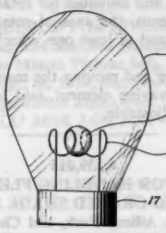
second means mounted on said control shaft to mate with a portion of said motor control lever, said second means having such a contour that in and out movement of said control shaft results in a rotation of said motor control lever and hence a corresponding change in motor speed.

4,239,014

SUSPENDED DROPLET SHOCK DETECTOR

Ulyss R. Rubey, Lewisville, Tex., assignor to Detectors, Inc., Graham, Tex.

Filed Jan. 22, 1979, Ser. No. 5,439
Int. Cl.³ G01P 15/03
U.S. Cl. 116—203 4 Claims



1. An apparatus which responds to an acceleration greater than a predetermined acceleration, which comprises:

a. a droplet of liquid within a container;

b. a holding means holding said droplet; said holding means contacting only a relatively small amount of surface less than the total surface of said droplet and yet in a manner which encloses and suspends said droplet predeterminedly spaced from a bottom wall of said container such that the mass and surface tension of said droplet forms a deformable reservoir at acceleration below said predetermined acceleration and such that when an acceleration greater than said predetermined acceleration is experienced, the inertia of the drop of liquid causes at least a portion of the drop of liquid to escape from said holding means; and

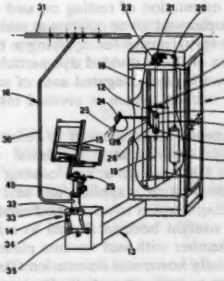
c. said holding means being attached to said container; said container sealingly surrounding said holding means such that when at least a portion of said droplet escapes from said holding means said portion will contact said container; said container presenting a visual sign upon being contacted by said portion.

4,239,015

DEVICE FOR PAINTING, SPRAYING, ENAMELLING OR TINTING OF MANUFACTURED ARTICLES IN GENERAL

Dante Novello, Manzano, and Alessandro Mengotti, Cormons, both of Italy, assignors to Mil S.p.A., Buttrio, Italy

Filed Feb. 21, 1978, Ser. No. 880,023
Int. Cl.³ B05C 5/00; B05B 5/02
U.S. Cl. 418—321 9 Claims



1. Device for painting, spraying, enamelling or tinting of manufactured articles in general, and for chairs in particular, comprising in combination:

carrier means carrying a spraying element and guide means supporting said carrier means to run vertically thereon, the carrier means having means for imparting to said spraying element an orbital motion,

said means for imparting including an arm supporting said spraying element and fixed on a rigid connecting element articulated to the extremities of two parallel arms, the arms being mounted on two wheels peripherally joined by a closed chain and mounted for rotation with respect to said carrier means, the axes of rotation of said wheels being parallel and at least one wheel being driven by a motor means;

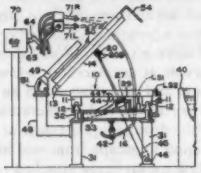
means for holding and moving the manufactured article in front of the spraying element, said holding and moving means being adjustable.

4,239,016

APPARATUS FOR HANDLING FLEXIBLE SHEET WHILE APPLYING GRADED SHADE BAND THEREON

William P. Cathers, Allison Park, and Charles W. Dorn, Jr., Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 21, 1978, Ser. No. 898,599
Int. Cl.³ B05B 5/02; B05C 13/02
U.S. Cl. 118—624 **2 Claims**



1. Apparatus for applying a graded coating to an elongated area of a flexible sheet of interlayer material comprising a loading and unloading chamber, a coating chamber, elongated rails extending in a straight path along a horizontal plane between said chambers, a carriage, means for moving said carriage in a straight horizontal path along said rails from said loading and unloading chamber to a given position in said coating chamber, a vacuum platen pivotally mounted on said carriage to normally rest thereon in a substantially horizontal orientation, means to apply a vacuum to said vacuum platen to support said flexible sheet thereagainst, means at said coating chamber for pivoting said vacuum platen to an oblique position angularly disposed relative to said carriage and said substantially horizontal orientation of resting on said carriage when said carriage occupies said given position at said coating chamber, electrostatic spray means for applying a highly charged spray composition of finely divided dye particles in a volatile liquid vehicle toward said elongated area of said sheet to be coated after the vacuum platen is pivoted into said oblique orientation,

said pivoting means being adapted to return said vacuum platen to said substantially horizontal orientation of mounting on said carriage at said coating chamber after said spray composition is applied, and said carriage moving means being adapted to return said carriage along said rails in said straight horizontal path to said loading and unloading chamber with said vacuum platen supported in said substantially horizontal orientation after said vacuum platen returns to said substantially horizontal orientation at said coating chamber, whereby an operator may remove said coated flexible sheet and replace the latter with another flexible sheet for coating,

said means for pivoting said vacuum platen comprising a pair of downwardly slotted lugs extending downward from said vacuum platen and movable therewith, a pair of upwardly slotted fingers supported in fixed position at said coating chamber adjacent to and below a path taken by said downwardly slotted lugs when said carriage moves into said given position within said coating chamber wherein said slotted lugs and slotted fingers have their pairs of slots in substantial alignment, a piston cylinder located below said given position, means for supporting said piston cylinder with its bottom end pivotally attached thereto, a piston rod extending upward from said piston cylinder, a cross bar attached to the upper end of said piston rod and extending in both directions thereof longitudinally of said rails, said cross bar having a length sufficient to engage said pair of upwardly slotted fingers simultaneously when said piston is retracted or to engage said pair of downwardly slotted lugs simultaneously when said piston is extended, said piston being retracted to lower said cross bar into a lower position engaging said upwardly slotted fingers in spaced relation below said path taken by said downwardly slotted lugs to permit said carriage to move into or out of said given position wherein said pair of downwardly slotted lugs are aligned over said cross bar in closely spaced relation to said upwardly slotted fingers and said piston being extended to transfer said cross bar to an upper position engaging the upper ends of the slots of said downwardly slotted lugs while said carriage occupies said given position to pivot said vacuum platen into said oblique orientation.

4,239,017

DEVELOPMENT SYSTEM

William M. Schwarz, Jr., Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 16, 1979, Ser. No. 57,867
Int. Cl.³ G03G 15/00
U.S. Cl. 118—656 **34 Claims**

1. An apparatus for developing a latent image with magnetic particles, including:

a magnetic member having a multiplicity of conductive fibers extending outwardly from the exterior surface thereof, said magnetic member attracting the magnetic particles to the conductive fibers; and

means for moving said magnetic member to advance the particles into contact with the latent image with the free end region of at least a portion of the conductive fibers contacting the particles being deposited on the latent image to form a substantially uniform particle image.

4,239,018

HEAT DETECTOR FOR LIVESTOCK

James E. Griffin, 11417 Maple Ave., Hebron, Ill. 60034, and Wayne R. Ryden, 230 Lake Ave., Barrington, Ill. 60010

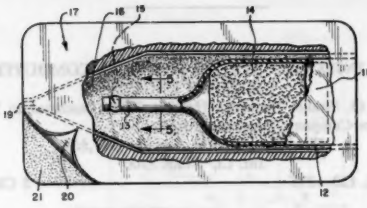
Filed Dec. 29, 1978, Ser. No. 974,368
Int. Cl.³ A01K 11/00, 29/00
U.S. Cl. 119—1 **10 Claims**

1. A pressure responsive delayed release standing heat detector for domestic animals, of the type adapted to be secured to

the body of said animal in a position to be contacted by a mounting animal, comprising:

a hollow flexible container having a reservoir portion communicating with a tubular neck portion;

a body of sponge-like material enclosed in said reservoir portion and at least partially saturated with a colored indicator fluid; and



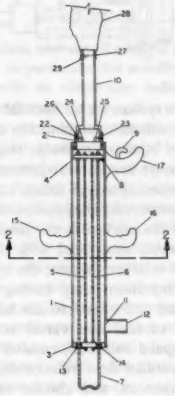
means for preventing seepage of fluid from said container and being adapted to be released in response to sustained pressure from a mounting animal on the flexible container and indicator fluid being expelled from said sponge-like material.

4,239,019

MARINE SPECIMEN COLLECTOR

Timothy Andrews, 7794 E. Walnut Ave., Ontario, Calif. 91761

Filed Aug. 27, 1979, Ser. No. 69,843
Int. Cl.³ A01K *79/00*
U.S. Cl. 119—3 **4 Claims**



1. A marine specimen collector comprising:

a nozzle,

a container having a cylindrical portion and front and rear closures closing the ends of said cylindrical portion, said cylindrical portion having an outlet formed in the wall thereof, said front closure having an inlet formed therein in fluid communication with said nozzle, said rear closure having at least one bearing mounted therein,

a piston rod slideably mounted in said bearing, the external end thereof being adapted for application of force to said piston rod,

a piston slideably mounted within said cylindrical portion of said container and affixed to the internal end of said piston rod, said piston being moveable between said inlet and said outlet,

means biasing said piston toward said rear closure,

a trigger housing mounted on said cylindrical portion,

sear means mounted within said trigger housing for holding said piston in biased position adjacent said inlet, and

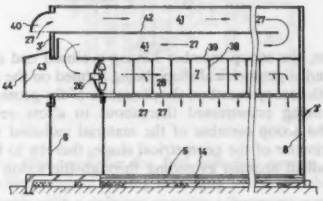
trigger means mounted in said trigger housing for releasing said sear allowing movement of said piston away from said inlet.

4,239,020

HOUSE AND METHOD FOR LIVESTOCK RAISING

Shin Kiyokawa, Sohka, and Shokichi Sakaguchi, Misato, both of Japan, assignors to Misato Plaheat Mfg. Ltd., Sohka, Japan

Filed Apr. 16, 1979, Ser. No. 30,642
Claims priority, application Japan, Feb. 22, 1979, 54/20138
Int. Cl.³ A01K *1/00*; F24F *7/06*
U.S. Cl. 119—16 **6 Claims**



1. A substantially closed livestock house comprising roof, ceiling, floor and side walls, which includes:

a heat insulating member applied about the roof and side walls comprising broken paper fragments processed for fire retardation;

a planar heating device disposed below the floor comprising a planar heat-generating element made of a plate of a synthetic resin containing carbon powder mixed therein or a fabric coated on impregnated with such synthetic powder, a pair of electrodes and a covering member;

an air inlet opening in one of the side walls near the uppermost portion of the side wall;

a fan arranged to pull outside air into the house and distribute it within the house;

at least one exhaust window in at least one side wall for effecting natural exhaust of air;

at least one duct formed with the ceiling as a bottom side, with the bottom side having a plurality of openings, the duct being arranged on the downstream side of the fan to receive the outside air pulled into the house by the fan;

a guide path between the air inlet and the fan for heat exchange of the outside air pulled in by the fan comprising a plate diaphragm horizontally extending longitudinally of the house so as to form an at least two-pass labyrinth from the air inlet to the fan extending the length of the house; and

one cover plate pivotally covering each exhaust window adapted to open the exhaust window responsive to a rise in the pressure in the house.

4,239,021

DISPOSABLE STORAGE CONTAINER CONVERTIBLE TO A BIRD-NESTING BOX

Michael R. P. Moore, 11724 Lovejoy, Silver Spring, Md. 20902

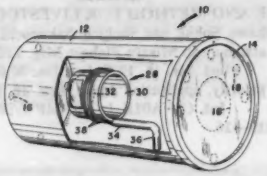
Division of Ser. No. 789,347, Apr. 21, 1977, Pat. No. 4,166,432.
This application May 29, 1979, Ser. No. 43,107
Int. Cl.³ A01K *31/00*
U.S. Cl. 119—23 **8 Claims**

1. As an article of manufacture, a substantially cylindrical storage container which typically holds a granular substance and which is sealably closed at one end by means of a snap-fit lid, which lid has a substantially planar outer surface, the storage container further comprising:

a geometrical shape formed on the planar surface of the lid,

the perimeter of the geometrical shape being pre-stressed thereabout to allow removal from the lid of the material included within the perimeter of the geometrical shape to form an access opening in the lid, the access opening having ridgeless perimetric surfaces formed about the periphery thereof; and,

a scoop member disposed within the interior of the container and having structural portions adaptable to use as a perch



member, the scoop member having a closed end and an open end, a geometrical shape being formed on the closed end of the scoop member, the perimeter of the geometrical shape being pre-stressed thereabout to allow removal from the scoop member of the material included within the perimeter of the geometrical shape, thereby to form a longitudinal channel extending through the scoop member.

4,239,022

METHOD AND APPARATUS FOR FUEL CONTROL OF AN INTERNAL COMBUSTION ENGINE DURING COLD-STARTING

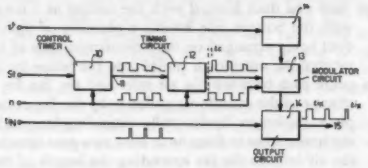
Ulrich Drews, Vaihingen-Pulverdingen; Michael Horbelt, Schwieberdingen; Hans Schnürle, Walheim; Peter Werner, Stuttgart; Otto Glöckler, Renningen; Dieter Günther, Murr, and Richard Bertsch, Asperg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 901,674

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1977, 2728414

Int. Cl.³ F02B 3/00

U.S. Cl. 123—491 **10 Claims**



1. An apparatus for controlling the fuel supply to an internal combustion engine including at least one fuel injection valve and spark ignition, wherein the apparatus includes an engine rpm sensor, an engine temperature sensor, an engine start-signal generator; wherein the apparatus is further comprises of:

a control timer, axtuated by engine cranking, for generating a train of supplementary pulses synchronized with engine rotation, the amplitude of the supplementary pulses changing with time and wherein the control timer is connected to and receives the output from the engine rpm sensor and the engine start-signal generator;

a trigger pulse suppression circuit which generates a pulse suppression signal, wherein the trigger pulse suppression circuit is connected to the control timer to suppress the supplementary pulses of the control timer, and wherein the trigger pulse suppression circuit is connected to and receives the output from the engine rpm sensor and the engine start signal generator;

a modulator circuit connected to the control timer to receive the supplementary pulses, and wherein the modulator circuit is connected to the trigger pulse suppression circuit to receive the pulse suppression signal, and wherein the modulator circuit is connected to and receives the signal from the engine temperature sensor such that the modulator circuit generates valve control pulses, whose duration depends on engine temperature, engine rpm and engine start.

4,239,023

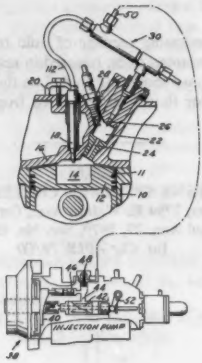
FUEL INJECTION SYSTEM FOR DUAL COMBUSTION CHAMBER ENGINE

Aladar O. Simko, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1978, Ser. No. 967,555

Int. Cl.³ F02B 3/00

U.S. Cl. 123—275 **5 Claims**



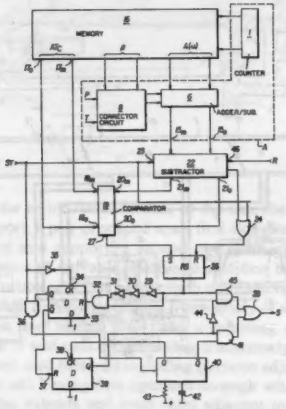
1. A fuel injection system for an internal combustion engine having main and prechamber combustion chambers and main and prechamber fuel injectors operable respectively at higher and lower fuel pressure levels to sequentially inject fuel into the respective chambers, passage means connecting the main and prechamber chambers for the ignition of the mixture in the main chamber from the mixture in the prechamber, and spark ignition means operably associated with the prechamber for igniting the air/fuel mixture therein, the system including an engine driven fuel injection pump having a fuel output line intermittently opened and closed to discharge into the line a controlled quantity of fuel that varies as a function of the changes in engine speed and load, conduit means connecting the output line in parallel flow relationship to the main and prechamber fuel injectors, and shuttle valve means in the conduit means operably to control the supply of fuel to the main and prechamber fuel injectors as a function of the duration of supply of fuel from the output line, the shuttle valve means including a valve body having a first fuel input connected to the output line and a second fuel input connected at one end to a makeup supply source of fuel at a lower pressure level than the output line and connected at an opposite end to a fuel pressurizing control chamber, means connecting the control chamber to the prechamber injector for opening of the prechamber injector upon pressurization of the control chamber to the lower pressure level, plunger means movably associated with the control chamber and movable into the latter chamber in response to a pressure increase in the output line to above a predetermined level to pressurize the control chamber and render operable the prechamber injector to inject fuel in an amount that progressively increases as a function of the duration of injection in the output line.

4,239,024

FAIL-SAFE IGNITION COIL DWELL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Claude Leichle, Le Pecq, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 9, 1979, Ser. No. 2,025
Claims priority, application France, Jan. 9, 1978, 78 00381
Int. Cl.³ F02P 5/04
U.S. Cl. 123—416 6 Claims



1. A fail-safe ignition coil dwell control system for internal combustion engine, in particular for automotive vehicles, said engine provided with an electronic induction coil control circuit in which is subtracted an angular reference signal and which includes a power element, current collectors placed in predetermined angular positions around a rotating element driven by the engine and coordinated by spotting means carried by the rotating element, and a digital computer associated with a read-only memory in which are stored constant coefficients that permit the calculation of data indicative of the ignition advance angle A_v for each half-turn of the crankshaft in the case of a 4-stroke, 4-cylinder engine and a synchronization signal generator for generating a synchronization signal SY at each half-turn of the engine, said computer generating a first control signal at a predetermined instant to trigger the power element of said induction coil control circuit, comprising:

the read-only memory additionally storing current conduction time duration data related to a predetermined operation of said electronic induction coil control circuit;

means coupled to the ignition advance angle A_v data and the current conduction time duration data stored in said read-only memory for detecting the absence of ignition spark emission based upon a comparison of the value of A_v data and current conduction time duration data developed during each half-turn of the engine;

signal generator means coupled to said detecting means for generating in the event of the detection of an absence of ignition spark a second control signal capable of triggering the power element; and

output switching means coupled to said detecting means, said computer and said signal generator means for switching the control of the triggering of the power element from said first control signal to said second control signal;

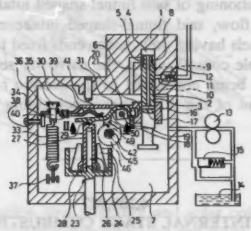
whereby the maintenance of ignition spark emission is maintained even in the event of a computer failure.

4,239,025

RPM REGULATOR FOR FUEL INJECTION PUMPS

Karl Konrath, Ludwigsburg, and Manfred Schwarz, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 970,064
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1978, 2802607
Int. Cl.³ F02M 59/24, 59/42
U.S. Cl. 123—366 13 Claims



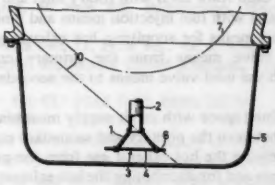
1. An rpm regulator for fuel injection pumps of internal combustion engines having a starting lever, which is coupled on one side with a delivery quantity adjustment member of the injection pump and on the other side with an rpm tachometer, a drag lever to restrict starting lever movement, such that said starting lever is subjected to an rpm-dependent force that is counter to an arbitrarily variable force of a main regulator spring which engages the drag lever counter to the force of a starting spring which is arranged between the starting lever and the drag lever and is deformable up to the starting lever, such that the starting lever acts as a stop when the starting lever is against the drag lever, further wherein an additional stop means is provided which urges the starting lever counter to the direction urged by the starting spring and that this additional stop means is adjustable as a function of temperature.

4,239,026

PRESSURE LUBRICATION FOR INTERNAL COMBUSTION ENGINES

Kurt Streicher, Lohmar, and Achim zur Nieden, Porz-Urbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed May 13, 1976, Ser. No. 685,752
Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522605
Int. Cl.² F01M 1/00
U.S. Cl. 123—196 R 2 Claims



1. A pressure lubricating system for an internal combustion engine, which includes in combination: an oil pan for receiving and storing lubricating oil, a suction conduit connectable to a pump and extending into said oil pan in the central longitudinal plane of said engine and having an inlet opening at its lower end immersed in lubricating oil below the normal level of oil in

said oil pan, said suction conduit for air-free suction including a slim funnel-shaped intake with its largest inside cross section amounting to only about five times that of the cross section of the suction conduit portion adjacent said funnel-shaped intake for a cross-sectional surface ratio of 1:5, and a flat, disc-shaped member having an opening constituting said inlet opening, said disc extending outwardly beyond the perimeter of the outer surface of said funnel-shaped intake and having a flow stabilizing effect to assure that fewer air bubbles are taken along as well as for avoiding of air suctioning during low oil level and inclined positioning of said funnel-shaped intake to attain air-bubble-free flow, said funnel-shaped intake comprising two conical funnels having their wider ends fixed to each other to form a double conical intake, the narrower section of one of said funnels being connected to the suction conduit and the narrower end of the other funnel coinciding with said inlet opening.

4,239,027

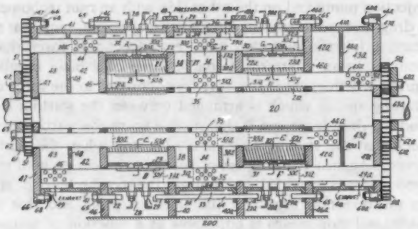
ROTARY INTERNAL STAGE COMBUSTION ENGINE

Joachim E. Lay, 1749 Ridgewood, East Lansing, Mich. 48823

Filed Jul. 2, 1979, Ser. No. 54,034

Int. Cl.[3] F02B *53/02, 47/08*

U.S. Cl. 123—203 **17 Claims**



2. In a rotary internal combustion engine with a rotary shaft defining a longitudinal axis of rotation and mounting dual eccentric rotors spaced apart on the shaft with each rotor mounted in a separate housing and with chamber volume defining means between the rotors and the housings so as to provide multiple variable volume gas compression compartments around each rotor, with fuel ignition means and air inlet valve means into and hot exhaust gas outlet valve means from the compartments, wherein in succession around each rotor a compressed fuel and air mixture is ignited by an ignition means in the compartments to provide the internal combustion, the improvement which comprises:

(a) multiple primary and multiple secondary compartments around each rotor each with rotary inlet and outlet valve means and with fuel injection means and ignition means;

(b) conduit means for supplying hot exhaust gas from the outlet valve means from the primary compartments through the inlet valve means to the secondary compartments;

(c) a confined space with an air supply means in the conduit means between the primary and secondary compartments for receiving the hot exhaust gas from the primary compartments and for distributing the hot exhaust gases mixed with air to the secondary rotor compartments, wherein a compressed fuel and air mixture in the primary and the secondary compartments around each rotor is ignited by the ignition means in succession and wherein the fuel and air mixture in the secondary compartments is diluted with hot exhaust gas so as to provide the fuel, air and hot exhaust gas mixture which can be lean in fuel.

4,239,028

AIR FLOW MEASURING DEVICE FOR INTERNAL COMBUSTION ENGINES

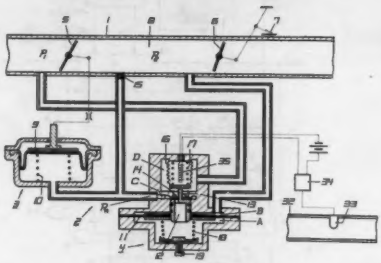
Kei Kimata, Aichi; Tsugito Nakazeki, and Yoshinobu Yasuda, both of Iwata, all of Japan, assignors to N T N Toyo Bearing Co. Ltd., Osaka, Japan

Division of Ser. No. 710,126, Jul. 30, 1976, Pat. No. 4,153,018. This application May 7, 1979, Ser. No. 36,493

Claims priority, application Japan, Jul. 31, 1975, 5093972; Sep. 2, 1975, 50-106795

Int. Cl.[3] F02D *7/00*

U.S. Cl. 123—389 **2 Claims**



1. In an internal combustion engine having a fuel control unit, an air suction pipe means, and accelerator means, the improvement of an air fuel ratio compensating device for improving the performance of the engine, said compensating device comprising a flow detection valve positioned upstream in the air suction pipe means and operatively associated with the fuel control unit, a flow control valve positioned downstream in the air suction pipe means and in series with said flow detection valve, said flow control valve being operatively connected to the accelerator means, said flow detection valve and said flow control valve constituting an area flow meter system whereby the difference in pressure existing on opposite sides of the flow detection valve may be maintained at a predetermined value to insure that the amount of air flow is proportional to the opening area of the flow detection valve thereby permitting a determination of the amount of air flow on basis of the opening area of the flow detection valve, a feedback control mechanism for controlling said area flow meter, said control mechanism including pressure-sensitive amplifier means for detecting and amplifying the deviation of the difference in pressure and valve opening means connected to said amplifier means and operatively associated with said flow detection valve for controlling the opening and closing of said detection valve by the output from said amplifier means, and compensating means for compensating for the set value placed in the pressure-sensitive amplifier means according to the operating conditions of the internal combustion engine, and wherein said feedback control mechanism includes a pressure difference setting diaphragm actuating the amplifier means and the compensating means include a bellows interlocked to the pressure difference setting diaphragm, and a heater disposed in said bellows, said heater being adapted to be actuated according to the operating conditions of the internal combustion engine, said bellows achieving the desired compensation for the set value placed in the pressure-sensitive amplifier means according to the operating conditions of the engine.

4,239,029

GRATE FOR INDUSTRIAL FURNACES

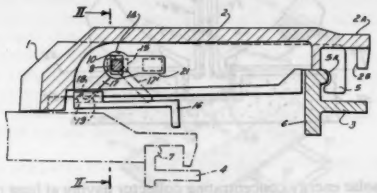
Johannes J. Martin; Walter J. Martin, and Erich Weber, all of Munich, Fed. Rep. of Germany, assignors to Josef Martin Feuerungsbau GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,769

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808057

Int. Cl.³ F23H *1/02*

U.S. Cl. 126—163 R 28 Claims



1. In a grate for an industrial furnace or the like, the combination of a support; a pair of spaced apart first elongated grate bars mounted in said support; a second elongated grate bar disposed between and movable relative to said first bars; and means for connecting said first bars to each other, including an elongated coupling member extending transversely of said bars and having first and second ends, and a retaining element disposed at each of said ends and extending transversely of said coupling member, said first bars including portions adjacent to said second bar and having first openings through which said coupling member extends and inner sides adjacent to the respective retaining elements, said second bar including at least one section disposed between said portions of said first bars and having a second opening through which said coupling member extends and which is sufficiently large to allow said second bar to move with respect to said first bars and said connecting means.

4,239,030

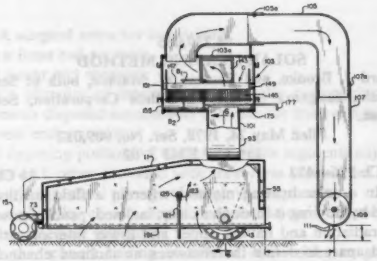
FIELD BURNER APPARATUS

Everett H. Benson, Rte. #1, Box 229A, Eagle Creek, Oreg. 97022

Filed Jul. 23, 1979, Ser. No. 59,809

Int. Cl.³ F23C *5/00*

U.S. Cl. 126—271.1 10 Claims



1. A field burner comprising a vehicle formed with a downwardly opening cavity to cover a burning area,

first means for creating a zone of elevated temperature higher than that in said cavity,

second means for withdrawing products of combustion from the cavity and directing them through said zone,

and thence discharging them onto the field forwardly of the cavity to thereby elevate the temperature of the field portion about to be covered by the cavity.

4,239,031

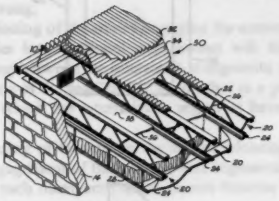
COMBINATION ROOF STRUCTURE AND SOLAR COLLECTOR

Floyd R. Granger, 24 Heard Dr., Greenville, S.C. 29605

Filed Oct. 30, 1978, Ser. No. 955,768

Int. Cl.³ F24J *3/02;* F24D *5/04*

U.S. Cl. 126—429 3 Claims



1. A combination roof structure and solar collector for a building having vertical side walls and end walls comprising:

a plurality of laterally spaced bar joists extending from one of said walls to an opposite wall;

said bar joists including:

(i) an elongated upper member,

(ii) an elongated lower member vertically spaced below said upper member,

(iii) braces extending between said upper member and said lower member,

(iv) laterally extending flanges projecting outwardly in opposite directions from said lower member,

a translucent panel carried on top of said upper members providing a roof structure for said building while permitting solar energy to pass therethrough;

lower panels carried on and extending between the flanges of said lower members spanning an area directly below said translucent panel;

a solar energy absorbing surface carried on said panels which are carried on said flanges;

insulation material carried below said lower panels for insulating said interior of said building from said solar energy absorbing surface;

a chamber provided between said solar energy absorbing surface and said translucent panel;

means for circulating air through said chamber absorbing heat from said solar energy absorbing surface and supplying said air to said building.

4,239,032

PORTABLE WATER CARRIERS

Leslie F. Irving, 60 New Rd., Bromsgrove, Worcestershire, England

Filed Feb. 21, 1978, Ser. No. 879,967

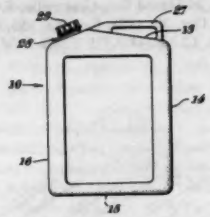
Claims priority, application United Kingdom, Feb. 23, 1977, 7533/77

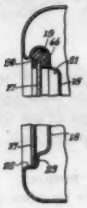
Int. Cl.³ F24J *3/02;* B65D *23/00*

U.S. Cl. 126—437 5 Claims

1. A portable water container including two opposed spaced walls connected by side walls to enclose a space for the storage of water, one of said two opposed walls comprising a first, outer panel of light-transmissive material and a second, inner panel integral with the other of the opposed spaced walls and with said side walls and spaced from said first panel to form a gap, said second panel having an integral, peripheral extension portion with said first panel sealingly connected thereto, said second panel having a greater coefficient of thermal conduction than any other part of said container, whereby radiant heat

emitted by the sun and falling on said first panel passes therethrough and falls on said second panel which is thereby heated





and which transmits its heat to the water stored in said container.

4,239,033

PARABOLIC REFLECTOR UNIT FOR SOLAR ENERGY COLLECTOR

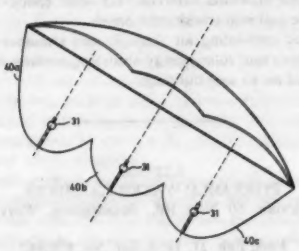
Peter S. Matkovits, 17 W. Dale Ave., Glen Parva, Leicester, England

Filed Sep. 15, 1978, Ser. No. 942,795

Claims priority, application United Kingdom, Sep. 22, 1977, 39469/77

Int. Cl.³ F24J *3/02*; G02B *5/10*

U.S. Cl. 126—438 **12 Claims**



10. A parabolic reflector unit for incorporation in a solar energy utilization apparatus of the type having an elongated energy collection device, comprising:

first and second individual parabolic cylindrical reflectors mounted together with their longitudinal axes parallel, the wall of at least one of said first and second reflectors which is further from the other reflector being longer than the wall nearer the other reflector, the line of focus of each said first and second parabolic, cylindrical reflectors being situated on a respective opposite side of the axis of symmetry of said unit, a separate elongated energy collection device being mountable along each of said lines of focus.

4,239,034

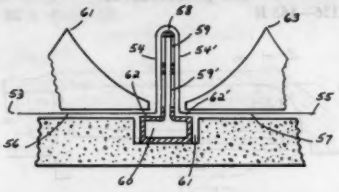
SOLAR ENERGY COLLECTOR

William P. Niedermeyer, 1024 Mt. Mary Dr., Green Bay, Wis. 54301

Filed Jul. 18, 1978, Ser. No. 925,777

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—439 **18 Claims**



1. A solar energy concentrating collector having at least one reflector surface and at least one substantially planar vertical absorber surface coacting therewith for the purpose of absorbing reflected solar rays,

said absorber surface being at least partially located in a plane coincident with the nadir of the reflector surface

at least one fluid conduit underlying said collector absorber surface

the absorber surface being continuous and forming a portion of said fluid conduit,

at least one horizontal extension of said continuous absorber surface being below said coacting reflector surface,

a continuous web of thin material forming said absorber surface and said horizontal extension,

spaced apart first portions of said continuous web of thin material,

an absorptive coating on said spaced first portions,

said spaced first portions being formed to define a partial enclosure of one of said fluid conduits a second portion of the said continuous web of thin material adjacent the absorptively coated portion being below said coacting reflector surface,

fluid input and output means,

said fluid conduit being cooperatively connected to said fluid input and output means.

4,239,035

SOLAR HEATING METHOD

Richard J. Brooks, and Thomas W. Marson, both of Seattle, Wash., assignors to The Chemithon Corporation, Seattle, Wash.

Filed May 24, 1978, Ser. No. 909,012

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—452 **14 Claims**

1. In a solar heating method wherein a fluid medium is heated by flowing it through a clear, inclined, panel exposed to solar radiation and having upper and lower interior surfaces spaced apart to define therebetween an inclined channel for said fluid medium, the steps comprising:

providing said fluid medium as a liquid composed essentially of water with carbon particles suspended therein;

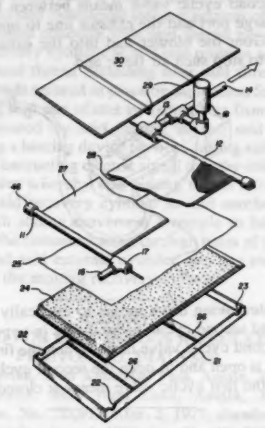
wetting said carbon particles with a wetting agent added to said liquid;

wetting at least said upper interior panel surface with a wetting agent added to said liquid;

said wetting agents comprising an insubstantial part of said liquid;

completely filling said channel so that said liquid is in contin-

uous uninterrupted contact with said upper interior panel surface;



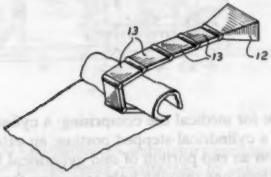
and preventing bubble formation adjacent said upper interior panel surface; wherein said wetting agents comprise no more than 1% by volume of said liquids.

4,239,036

SURGICAL RETRACTOR

Abbott J. Krieger, 49 Nottingham Rd., Short Hills, N.J. 07078

Filed May 29, 1979, Ser. No. 43,449
Int. Cl.³ A61B *17/02*
U.S. Cl. 128—20 **4 Claims**



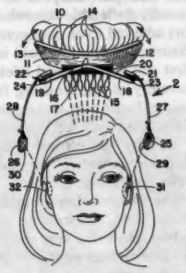
1. A surgical retractor comprising,
(a) a front end segment,
(b) a rear end segment,
(c) a plurality of intermediate generally rectangular segments disposed successively between the front end and the rear end segments.
(d) opposing portions of the intermediate segments adjacent to each other provided with transverse concavities,
(e) a longitudinal passage through the segments,
(f) a plurality of rod shaped spacers disposed between the intermediate segments,
(g) the spacers having transverse convexities in general conformity with the concavities of the adjacent intermediate segments,
(h) the spacers having longitudinal passages therethrough in general registration with the longitudinal passages in the intermediate segments,
(i) a stand,
(j) the intermediate segments in alternation with the spacers strung on the strand with their respective concavities and convexities in engagement with each other,
(k) the strand anchored at one end to the front end segment,
(l) the passage in the rear end segment having a threaded portion,
(m) a threaded plug in threaded engagement with the threaded passage in the rear end segment,
(n) the strand anchored at its other end from the front end segment to the plug,
(o) the threaded plug rotatable to exert or relax tension on the strand on which the intermediate segments and spacers are strung,
(p) the tensioning of the strand engaging the convexities and concavities into frictional engagement wih the spacers intervening between the intermediate segments, to rigidize the attitude of the segments to each other in a preselected shape in which the intermediate segments have been deflected,
(q) the relaxing of tension on the strand releasing the frictional engagement of the intermediate segments and spacers with each other until the segments become limp.

4,239,037

FACE LIFTING EQUIPMENT

David C. Fausone, 1011 N. Hilldale, Apt. 2, Beverly Hills, Calif. 90069

Filed Sep. 19, 1979, Ser. No. 77,109
Int. Cl.³ A61F *5/08*
U.S. Cl. 128—76 B **2 Claims**



1. Face lifting equipment comprising, in combination:
(a) a hairpiece having an elongated base made up of a central portion with left and right wing portions extending in opposite directions and hair secured to the top surfaces of said central and wing portions;
(b) a comb member secured to the underside of said central portion with teeth extending generally rearwardly so that said hairpiece can be anchored on top of a woman's head to blend in with the woman's hair;
(c) an elongated supporting strip underlying said base secured at its central top to said central portion of said base and having left and right arm extending generally beneath said left and right wing portions, respectively, said wing portions being bendable upwardly to expose the top surfaces of said arms, said top surfaces being covered with VELCRO;
(d) left and right pads having VELCRO for interlocking with the VELCRO on said arms;
(e) left and right adhesive elements for adhering to said woman's skin adjacent to left and right temple areas, and
(f) left and right elastic lines connecting said adhesive elements to said pads respectively, the positions of the pads on said arms being adjustable by simply lifting the pads to separate the VELCRO facings and repositioning them closer to said central portion or further from said central portion depending on whether it is desired to increase or decrease the lifting tension on said adhesive elements.

4,239,038

MANUAL RESUSCITATORS

Ronald W. Holmes, Ringwood East, Australia, assignor to The Commonwealth Industrial Gases Limited, Australia

Filed Mar. 6, 1979, Ser. No. 18,082
Claims priority, application Australia, Mar. 7, 1978, 3620/78
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—205.13 6 Claims

1. A resuscitator valve assembly comprising a hollow valve housing defining an inlet port adapted to be connected to a self-expanding manually deflatable reservoir of breathable gas, an intermediate port adapted to be connected to patient supply means, and an exhaust port opposite said inlet port; a tubular section having a first end defining said inlet port and a second end projecting internally of said housing from said inlet port and spaced from said exhaust port and terminating in an annular valve seat, said second end further including an annular flange projecting radially therefrom; a deformable closure diaphragm overlying said valve seat and said flange and having a peripheral radially inwardly directed, channel-sectioned portion, the rim of the flange being secured within said channel-sectioned portion, said deformable closure diaphragm normally positioned on said valve seat and allowing communication between the intermediate port and the exhaust port but able to be distended by pressure at the inlet port to a position away from said valve seat it opens the inlet port and closes the exhaust port; and non-rebreathing valve means comprising at least one hole defined in said flange intermediate said rim and said tubular section second end and extending through said flange, and an annular resilient skirt projecting radially inwardly from the channel-sectioned portion of the diaphragm whereby said at least one hole is normally closed by said skirt, said non-rebreathing valve means being exposed to the inlet port when, and only when, the diaphragm is distended thereby to permit gas flow from the inlet port to the intermediate port but preventing flow in the opposite direction.

4,239,039

DUAL CONTROL VALVE FOR POSITIVE PRESSURE ARTIFICIAL RESPIRATION APPARATUS

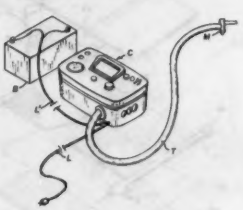
Harris A. Thompson, 175 Bellevue Dr., Boulder, Colo. 80302

Filed Feb. 28, 1979, Ser. No. 15,784
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—205.24 9 Claims

1. In a positive-pressure artificial respiration apparatus, for aiding in inspiration and expiration cycles of breathing by a patient, of the type having a continuously-operating blower connected to a blower motor mounted in a motor chamber and having a first discharge path means from said blower to a first discharge port connected to a breathing tube and a second discharge path means from said blower through said motor chamber around said motor and to a second discharge port connected to an exhaust line, the improvement comprising:

(a) a first cyclic valve means between the said first discharge port and the breathing tube to open to permit air flow from the blower and into the breathing tube and to close to stop such air flow;

(b) a second cyclic valve means between the said second discharge port and the exhaust line to open to permit air flow from the blower and into the exhaust line and to close to stop such air flow; and



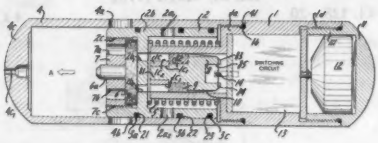
(c) an interlinking drive means to cyclically drive the said first and second cyclic valve means in opposition to close the second cyclic valve means when the first cyclic valve means is open and to open the second cyclic valve means when the first cyclic valve means is closed.

4,239,040

CAPSULE FOR MEDICAL USE

Takeshi Hosoya; Fumihiro Tanaka, and Kazuo Noguchi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Oct. 13, 1977, Ser. No. 841,985
Claims priority, application Japan, Oct. 19, 1976, 51-125234; Oct. 22, 1976, 51-126909
Int. Cl.[3] A61M *31/00*
U.S. Cl. 128—213 R 9 Claims



1. A capsule for medical use comprising: a cylindrical body frame having a cylindrical stepped portion; an external cylinder mounted on an end portion of said cylindrical body frame and having at least one through hole extending through a wall portion thereof; a recovery cylinder mounted for sliding movement from one position to another position within said external cylinder and having at least one through hole extending through a wall portion thereof and capable of communicating with said through hole of said external cylinder during sliding movement of said recovery cylinder in said external cylinder; biasing means for exerting a biasing force on said recovery cylinder tending to slidably move the same along said external cylinder from said one position to said another position; actuatable retaining means for releasably retaining said recovery cylinder at said one position within said external cylinder against said biasing force and operative when actuated for releasing said recovery cylinder whereby said biasing force effects sliding movement of said recovery cylinder to said another position; an electric switching circuit including receiving means for switching on the switching circuit when an externally transmitted instructing electric signal is received by said receiving means to actuate said retaining means to thereby release said recovery cylinder; and means for supplying electric power to said switching circuit to enable operation of said switching circuit; said recovery cylinder including two axially spaced chambers one of which surrounds said cylindrical stepped portion of said cylindrical body frame when said recovery cylinder is in said one position, and means for hermeti-

cally separating said one of said two chambers from the other and being disposed within said other of said two chambers; said retaining means comprising a thread hanger removably fixed and inserted into said cylindrical stepped portion of said body frame, and a thread coacting with said thread hanger for retaining said recovery cylinder at said one position against said biasing force, said thread extending over said thread hanger and having its ends secured in place by said means for hermetically separating said one of said two chambers from the other and being tensioned by said biasing means; said receiving means including a heating device for heat-cutting said thread in response to the instructing electric signal thereby releasing said recovery cylinder whereby said biasing means effects sliding movement of said recovery cylinder to said another position and during such sliding movement a sample to be collected flows through the communicating through holes of said recovery cylinder and said external cylinder into the empty space formed behind the moving recovery cylinder.

4,239,041

METHOD FOR CONTINUOUS AMBULATORY PERITONEAL DIALYSIS

Robert P. Popovich, 2928 Kassarine Pass, Austin, Tex. 78704; Jack W. Moncrief, 3633 West Lake, Austin, Tex. 78746

Division of Ser. No. 773,912, Mar. 3, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 931,098

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—213 A **10 Claims**

5. A method for continuous ambulatory peritoneal dialysis of a patient, the patient being unattached to automatic cycling dialysis apparatus, comprising the steps of:

infusing dialysate fluid into the patient's peritoneal cavity;

allowing the dialysate fluid to remain within the patient's pertioneal cavity for a residence period time during which the patient remains ambulatory and unattached to a dialysis fluid supply that is in a fixed location;

draining the dialysate fluid from the patient's peritoneal cavity after the time period; and

immediately repeating the aforesaid steps, the steps being repeated several times per day, every day, at intervals corresponding to the residence time period, so as to maintain a substantially constant presence of dialysate fluid within the patient at all times.

4,239,042

CATHETER PLACEMENT SYSTEM

Kiyoshi Asai, Kamakura, Japan, assignor to Dow Corning K.K., Tokyo, Japan

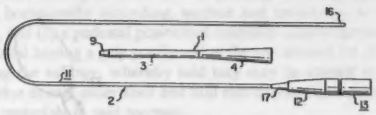
Filed Apr. 5, 1979, Ser. No. 18,214

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214.4 **6 Claims**

1. In a catheter placement system which includes a cannula; a cannula inserting device for inserting the cannula in a body, the device being adapted to be removably positioned within the cannula during insertion and including a needle longer than the cannula; and a catheter adapted for insertion into the body through the cannula after the cannula inserting device has been removed from the cannula; the improvement wherein the catheter comprises:

(a) a body portion having a double-wall structure consisting of an outer tube made of pliable, nonthrombogenic mate-



rial and a reinforcing inner tube made from a pliable material having a rigidity which is higher than that of the outer tube and which is sufficiently high that the catheter does not collapse during use; and

(b) a tip portion at one end of the body portion, the tip portion being formed from a pliable nonthrombogenic material.

4,239,043

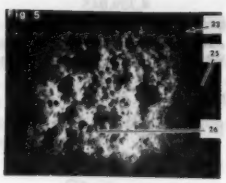
ABSORBENT MEANS FOR CATAMENIAL DEVICES

Dale A. Gellert, Aurora, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 29, 1978, Ser. No. 964,842

Int. Cl.³ A61F *13/20*

U.S. Cl. 128—285 **8 Claims**



1. An absorbent material consisting of:

a hydrophilic foam means selected from the group consisting of polyester foam and polyurethane foam; and

absorbency improvement means at least arrayed on the surface of said foam means, said absorbency improvement means comprising about 5 to about 35% cellulose fibers by weight of said absorbent material wherein said fibers have an average length of at least 1.0 mm and a diameter of 15–45 microns.

4,239,044

INFLATABLE CATHETER FOR A MALE URINAL

George R. Pavlinch, P.O. Box "P", Murrieta, Calif. 92362

Filed Dec. 29, 1978, Ser. No. 364

Int. Cl.³ A61F *5/44*

U.S. Cl. 128—295 **12 Claims**

1. A male incontinence device having a receiving end adapted to be applied to a user's organ and a drain end adapted to convey the user's urine to an external urine collection means, said incontinence device comprising:

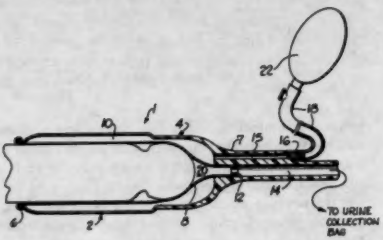
an outer tubular sheathing formed from a flexible material,

an inner tubular sheathing formed from a flexible material,

said inner and outer tubular sheathings joined together at each of the device receiving and drain ends, such that an annular, inflatable fluid chamber is formed between said inner and outer sheathings and an axially extending urine drain passage is formed at the interior of said inner sheath-

ing, said fluid chamber and said drain passage having substantially identical linear dimensions through said device,

urine conveying means having a relatively narrow diameter with respect to said urine drain passage to interconnect said inner tubular sheathing to said urine collection means, whereby to cause said inner sheathing to constrict at the drain end of said device, and



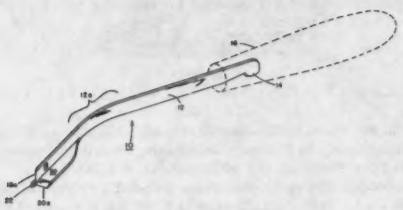
fluid source means adapted to be connected to said fluid chamber for inflating said chamber, whereby said inner sheathing is collapsed under pressure around the user's organ and said drain passage is evacuated, so that urine is extracted therefrom by means of suction when said device is connected to the urine collection means and urine backflow from the collection means to said drain passage is prohibited.

4,239,045

SURGICAL KNIFE

Allen P. Schlein, 107 Curtis Ter., Fairfield, Conn. 06430

Filed Apr. 4, 1979, Ser. No. 26,836
Int. Cl.³ A61B 17/32
U.S. Cl. 128—305 **4 Claims**



4. A surgical knife for the surgical removal of the meniscus from the human knee, comprising:

an elongated transversely flat, flexible shank having a rearward end engageable with a handle and a forward end being curved concavely near said forward end and first and second blades fixed thereon at its forward end,

said first blade being flat transversely and constituting a forward extension from the curved portion of said shank and having a transverse cutting edge across the forward end thereof,

said second blade being integrally joined to said first blade along one edge thereof and disposed on the concave side of said first blade in a plane perpendicular to the plane of said first blade, and having a width at its forward end substantially equal to the width of said first blade and extending rearwardly from the forward end of said first blade and tapered at its rearward end to merge with said shank at a point forwardly of said curved portion, said second blade having a transverse cutting edge at the forward end thereof, and

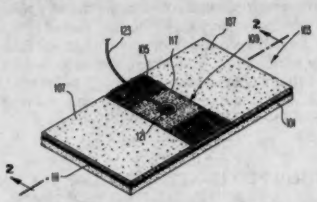
a guide number integral with said blades projecting forwardly from substantially the point of intersection of the cutting edges of said first and second blades.

4,239,046

MEDICAL ELECTRODE

Lincoln T. Ong, 5940 Fairwood Dr., Minnetonka, Minn. 55343

Filed Sep. 21, 1978, Ser. No. 944,622
Int. Cl.³ A61B 5/04
U.S. Cl. 128—640 **13 Claims**



1. An electrode comprising:

a substrate having electrically conductive and adhesive properties;

a piece of electrically conductive stranded material adhesively adhered to by one side of said adhesive substrate and being in electrical connection therewith; and

a piece of electrically conductive knitted filament material, said knitted material being sewn to said stranded material to make an electrical connection therewith.

4,239,047

METHOD AND APPARATUS FOR AURALLY DETERMINING PRESENCE OR ABSENCE OF PATHOLOGICAL STENOSIS

William L. Griggs, III; Ernest E. Serrano; Dan Page, and Charles G. Reul, all of Fort Smith, Ark., assignors to William L. Griggs, III, Fort Smith, Ark.

Filed May 22, 1978, Ser. No. 908,159
Int. Cl.³ A61B 5/02
U.S. Cl. 128—663 **15 Claims**

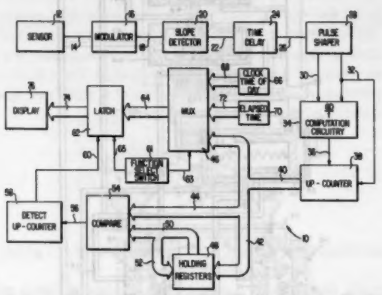
1. The method of aurally determining the presence or absence of pathological stenosis in a person's blood vessels which comprises making a sound recording of the plural-frequency sounds that are developed by a Doppler scan of said blood vessels, using said sound recording and a filter with a predetermined rejection frequency to develop electrical signals within a predetermined frequency range which can be used to aurally reproduce any stenosis-indicating sounds of a given frequency in said plural-frequency sounds, and thereafter using said sound recording and a different filter with a different predetermined rejection frequency to develop electrical signals within a different predetermined frequency range which can be used to aurally reproduce any stenosis-indicating sounds of a different frequency in said plural-frequency sounds, to make successive aural sensings of different-frequency portions of said plural-frequency sounds that are developed by said Doppler scan by making successive aural sensings of different frequency ranges of said recorded plural-frequency sounds, thereby facilitating the detecting of some hard-to-detect stenosis-indicating sounds.

4,239,048

CARDIOTACHOMETER USING AUTOCORRELATION TECHNIQUES

Robert R. Steuer, Salt Lake City, Utah, assignor to Multitronics Corporation, Salt Lake City, Utah

Filed Feb. 6, 1979, Ser. No. 9,823
Int. Cl.³ A61B 5/02
U.S. Cl. 128—666 24 Claims



1. A cardiotachometer for indicating heart rate of a user in beats per minute, said cardiotachometer comprising:

means, responsive to the heart beats of said user for producing a heart rate signal having portions representative of the beats per minute of said user's heart;

means for storing the portions of said heart rate signal;

means for comparing each of said stored portions with the most recent portion of said heart rate signal;

means for issuing a display signal when at least two of the comparisons in said comparing means is made between portions within a predetermined comparison range; and

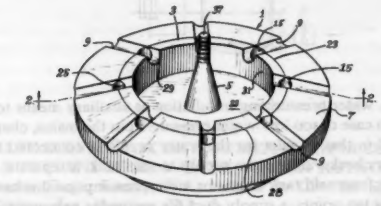
means, responsive to said display signal, for displaying said most recent portion of said heart rate signal in eye-readable format wherein heart rate in beats per minute is indicated.

4,239,049

ASHTRAY

George W. Perry, c/o Fitch, Even & Tabin 135 S. LaSalle St., Chicago, Ill. 60603

Filed May 10, 1979, Ser. No. 37,500
Int. Cl.² A24F 19/14
U.S. Cl. 131—235 ST 7 Claims



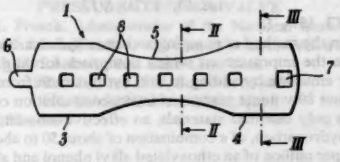
1. An ashtray comprising, in combination, (a) an outer shell having a generally flat, horizontally extending surface with an outwardly extending groove formed therein for receiving a smoking element, said outer shell also having a vertically extending wall depending downwardly from the inner edge of said horizontally extending surface, said wall having a downwardly extending recess positioned at the inner end of said outwardly extending groove, (b) a tray within said outer shell comprising an outer wall adjacent said wall of said outer shell, said outer wall having a complementary recess formed therein opposite the recess in said wall of said outer shell, an ear extending outwardly from the complementary recess in said outer wall and into the downwardly extending recess in said outer shell, said tray having a generally flat, horizontally extending surface connected at the upper end of said outer wall, said surface having a groove therein aligned with said outwardly extending groove in the surface of said outer wall, said tray also having an inner wall depending from said generally flat, horizontally extending, surface and connected to a bottom, and (c) a pedestal positioned centrally of said bottom, said pedestal having a grip positioned at the top thereof for manipulating the ashtray, whereby said tray may be caused to move relative to said outer shell and said ears can automatically clear any materials in said recesses.

4,239,050

HAIR CURLER

Ennio Leuzzi, No. 4, Via Monteverde, Rome, Italy

Filed Jan. 30, 1979, Ser. No. 7,745
Claims priority, application Italy, Feb. 7, 1978, 35596/78[U]
Int. Cl.³ A45D 2/00
U.S. Cl. 132—40 8 Claims



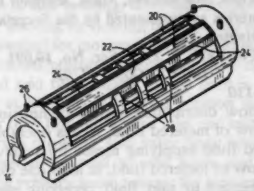
1. A hair curler characterized in that it comprises a flattened parallelepiped shaped body having wide faces which are convex in transverse planes and narrow faces substantial lengths of which are concave with respect to the longitudinal axis of the hair curler, and means at opposite ends of the hair curler for engaging a rubber band arranged for fastening a lock of hair wound on the hair curler.

4,239,051

INTEGRALLY-FORMED POLYMERIC MATERIAL COIN HOLDER

Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada

Filed Dec. 20, 1978, Ser. No. 971,335
Claims priority, application France, Dec. 23, 1977, 53852/77
Int. Cl.³ G07D 9/00
U.S. Cl. 133—8 R 6 Claims



1. An integrally-formed holder for disc-like objects constructed of flexible polymeric material and comprising:

an elongate body having a generally C-shaped cross-section and a radius of curvature substantially equal to the radius of the disc-like objects, and

a continuous end wall integral with said body at each end thereof, said end walls defining a substantially C-shaped opening in each end of said body of smaller radius of curvature than the radius of curvature of said body with

the C-shaped end openings encompassing the axis of said body within their periphery,

said body having an open latticework constituted by at least two radial ribs and two longitudinal bar-like members located in parallel radially-spaced relationship one on each side of the axis of the body, each of said bar elements having a recessed surface and a perimeter extending slightly outwardly from the surface of the body,

said holder being capable of limited resilient flexure about the axis of said body to increase the radii of curvature of said body and said end wall openings to permit insertion and removal of the disc-like objects through said curvilinear extremities,

said end walls exerting a resilient force on said body during said flexure and said increase of radii of curvature urging said body to assume said radius of curvature substantially equal to the radius of said disc-like objects.

4,239,052

METHOD OF TRANSPORTING VISCOUS HYDROCARBONS

Gifford G. McClaflin, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Feb. 21, 1979, Ser. No. 13,357
Int. Cl.³ F17D *1/17*
U.S. Cl. 137—13 **11 Claims**

1. In the method of pumping a viscous hydrocarbon through a pipe the improvement which comprises forming an oil-in-water emulsion by adding to said hydrocarbon from about 20 to about 80 volume percent of an aqueous solution containing, as the only essential materials, an effective amount, based on said hydrocarbon, of a combination of about 50 to about 10,000 parts per million of an ethoxylated alkyl phenol and about 50 to about 10,000 parts per million of a water-soluble alkaryl sulfonate, said ethoxylated alkyl phenol being selected from the group consisting of monoalkyl phenols and dialkyl phenols, wherein the alkyl group contains from about 6 to about 15 carbon atoms, and which contains from about 25 to about 75 ethoxy groups and said water-soluble alkaryl sulfonate has a molecular weight below about 410 and is represented by the formula

$$R_{(n)}Ar—SO_3M$$

wherein Ar is an aromatic moiety which is phenyl, tolyl, xylyl, or ethylphenyl, R is a linear or branched alkyl group containing 4 to 16 carbon atoms, n is an integer of 1 or 2, M is sodium, potassium, or ammonium, and the total number of carbon atoms in the alkyl groups is in the range of 8 to 16.

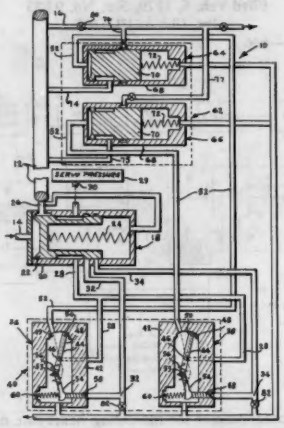
4,239,053

FUEL FLOW DISTRIBUTION SYSTEM

Richard H. Cornell, Marblehead, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 7, 1979, Ser. No. 10,091
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—110 **8 Claims**

1. A fluid flow distribution system comprising means for supplying a flow of metered fluid, means operably connected to said metered fluid supplying means for receiving and dispersing said flow of metered fluid, at least one distributor line operably connected to said fluid receiving and dispersing means for receiving said flow of metered fluid from said fluid receiving and dispersing means and dispensing said flow of metered fluid at a predetermined pressure, said metered fluid supplying means including a valve, said valve providing a signal in accordance with a change in flow through said distributor line, at least one switching means operably connected to said valve for receiving said signal therefrom and transmitting said signal, at least one on-off valve normally in the off position operably connected to said switching means for receiving said transmitted signal therefrom, said signal from said switching means actuating said on-off valve to the on position, means interconnecting said on-off valve to said fluid receiving and dispersing means and to said distributor line for providing



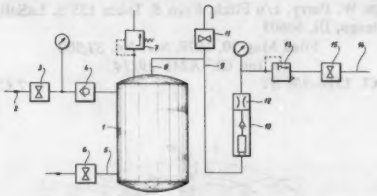
an additional path for said flow of metered fluid to flow from said fluid receiving and dispersing means to said distributor line upon said actuation of said on-off valve to said on position.

4,239,054

WATER PRESSURIZING INSTALLATION

Antoon J. Van Rijn, Hertog van Beierenstraat 7, Ter Aar, Netherlands

Filed Nov. 14, 1978, Ser. No. 960,604
Claims priority, application Netherlands, Nov. 15, 1977, 7712585
Int. Cl.³ F04F *1/06*
U.S. Cl. 137—209 **7 Claims**

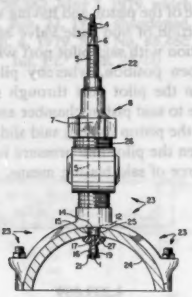


1. A water pressurizing installation as auxiliary means to be used in case of too low water pressure from the mains, characterized in that an inlet for the water supply is connected to a tank, a check valve in the supply to said tank, a separate discharge from said tank to one or more consumption discharges such as tap points, a supply duct for gas under pressure being connected to said tank separately from said supply and discharge and being provided with a float valve reacting to the amount of water in the tank to close said valve when the tank is full, the chamber of the float of said float valve together with the connection between said chamber and said tank forming a U-shaped duct wherein the volume of the float chamber from its bottom to the liquid level therein when the float valve just closes is greater than the maximum liquid volume which remains between the tank and the float chamber when gas is supplied to the tank.

4,239,055
PRESSURE PLUG

Michael Van Coffman, 1028 "C" St., Olivenhain, Calif. 92024

Filed Feb. 23, 1978, Ser. No. 880,632
Int. Cl.[2] F16K *43/00*
U.S. Cl. 137—315 1 Claim



1. A pressure plug for shutting off pressure in a fluid transmission line as not to interrupt the flow through the main line, comprising of a main cylindrical outer tube externally threaded its full length having one end shaped to fit a wrench, the outer end flared outward, said wrench fitting having a maximum outside diameter less than the outside diameter of the main tube, an inner cylindrical rod, externally threaded at one end, to fit one or more locking and tightening nuts, said rod having a length greater than the outer tube and an outside diameter less than the inner diameter of the outer tube, a flared tubing nut main guide internally threaded at one end to fit the outer tube and internally threaded at the other end to receive a service valve fitting, said flared tubing nut main guide configured or grooved internally to accept a sealing ring, attached to the end of the inner rod opposite to the locking and tightening nuts an elastomer plug assembly capable of being expanded externally by compression, said elastomer plug assembly utilizing pressure in transmission pipeline sealing aperture in pipeline, said elastomer plug assembly consisting of a tube of elastomer material disposed between retainers on the end of the inner rod and an elastomer seal and retainers at the point of contact with the outer tube and elastomer plug assembly.

4,239,056
VALVE SERVICE BOX HAVING MEANS FOR SECURING DIFFERENT SIZED VALVES AGAINST ROTATION

Thomas Shope, Kearny, N.J., assignor to CP Test Services-Valvco, Inc., Harrison, N.J.

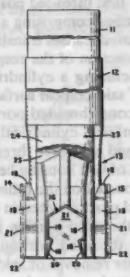
Filed Feb. 1, 1979, Ser. No. 8,618
Int. Cl.[3] F16K *27/12*
U.S. Cl. 137—370 65 Claims

1. A valve box comprising;

(a) at least one vertically elongated member having a generally axial passage open at the top and bottom,

(b) a hollow valve housing on the bottom of the elongated member open at its top and bottom, the open top communicating with the passage in the elongated member,

(c) the housing having at least two pairs of substantially diametrically opposed side openings each communicating with the bottom edge thereof, and

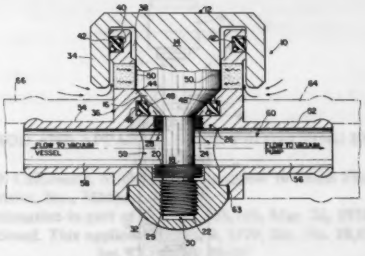


(d) a cover extending over each opening and detachably secured to the housing.

4,239,057
PRESSURE CONTROL VALVE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Kenneth H. Lambson, Salt Lake City, Utah

Filed Jul. 13, 1979, Ser. No. 57,465
Int. Cl.[3] E03B *3/18;* F16K *31/58*
U.S. Cl. 137—549 3 Claims



1. A control valve adapted to be connected between a vessel and a vacuum pump for controlling the pressure on the vessel, said valve comprising a housing having a bore extending therethrough the ends of which are adapted for connection to the vessel and vacuum pump, respectively,

an air inlet in said housing, filter means disposed in said air inlet for filtering air flowing through said air inlet; a valve body mounted for movement within said housing between a first, closed position wherein air flow through said air inlet and said filter means to said bore is blocked and a second, at least partially open position wherein at least some air flow through said air inlet and said filter means to said bore is provided, said valve body being mounted for movement orthogonal to said bore, said valve further including primary sealing means for preventing air flow to said bore when said valve body is in the closed position thereof, said valve body and said housing including conical mating surfaces which are brought into engagement when said valve body is in the closed position thereof, said conical surfaces disengaging during movement of said valve body away from the closed position thereof to provide a passage for air therebetween, said valve body also comprising a cylindrical surface which is disposed adjacent to said filtering means and which exposes an increasing amount of said filtering means to said passage

between said conical surfaces during movement of said valve body away from the closed position thereof;

a control member for controlling said movement of said valve body, said housing including a first threaded portion which engages a first threaded portion of said valve body, said control member comprising a rotatable control knob which, when rotated, causes translation of said valve body through the interaction of the respective portions;

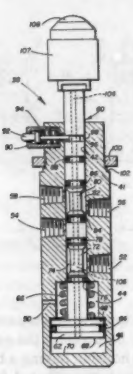
said valve body including a cylindrical portion located on the other side of said conical surface from the cylindrical surface and a second threaded portion of said valve body being formed on said cylindrical portion between said conical surface and said first threaded portion, a second threaded portion of said housing being formed in a portion of said housing located on the other side of said bore from said first threaded portion wherein said valve body including said second threaded portion is normally disengaged from the second threaded portion of said valve housing and which permits removal of said valve body from said housing only through unscrewing of said valve body from said housing through the interaction of the respective second threaded portions.

4,239,058

PULL TYPE RELAY VALVE WITH AUTOMATIC LOCKOUT

Clifford M. Peters, Longview, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 57,911
Int. Cl.³ F15B *13/042*; F16K *37/00*
U.S. Cl. 137—557 **15 Claims**



1. A valve for controlling fluid flow to and from an actuator in response to pressure changes in a pilot line, said valve comprising:

a valve body presenting a longitudinal bore therein, said bore having an enlarged inner end portion defining a piston chamber in the valve body;

a slide valve mounted in the bore for longitudinal movement between an open position for directing fluid to the actuator and a closed position for bleeding fluid from the actuator, said slide valve having an outer and extending outwardly of the valve body and adapted to be manually pulled to move the slide valve outwardly from the closed position to the open position for manual setting of the slide valve;

means biasing the slide valve inwardly toward the closed position;

a pilot port in a side portion of the valve body adapted for connection with the pilot line to sense the fluid pressure therein;

a piston carried in said piston chamber on an inner end portion of said slide valve opposite said outer end thereof, said piston presenting an inwardly facing pressure face for receiving pressurized fluid from said pilot port to hold the slide valve in the open position against the force of said biasing means; and

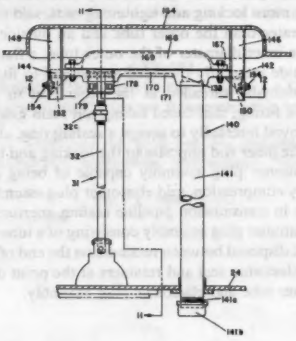
a fluid passage in the slide valve for directing fluid from said pilot port to said piston chamber for application to said pressure face of the piston, said passage extending to said pressure face of the piston and having an inlet port formed in a side portion of said slide valve at a location in fluid communication with said pilot port when said slide valve is in the open position, whereby pilot line pressure is applied from the pilot port through said inlet port and fluid passage to said piston chamber and against said pressure face of the piston to hold said slide valve in the open position when the pilot line pressure is sufficient to overcome the force of said biasing means.

4,239,059

AUTOMATIC AIR INLET AND OUTLET VALVE ASSEMBLY

Patricia S. Stoller, 4591 Amesbury Dr., Plymouth, Mich. 48170; Gerald D. Garner, 2732 Buckingham, Florissant, Mo. 63033, and John A. Krug, Jr., 340 Pralle La., St. Charles, Mo. 63301

Division of Ser. No. 808,916, Jun. 22, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,462
Int. Cl.³ F16K *24/00*
U.S. Cl. 137—587 **9 Claims**



1. An automatic air inlet and outlet valve assembly which automatically opens and closes when a bottom operable tank lading valve is opened and closed comprising: an air valve mounted adjacent the top of the tank movable between opened and closed position relative to a chamber opening in a valve chamber having an upper chamber portion and a lower chamber portion; said valve chamber being in fluid communication by means of conduit means with an opening in the bottom of the tank; said air valve seating on said lower chamber portion; said air valve being automatically operated when said lading valve opens and closes by air valve linkage means including an operating shaft which extends from the lading valve up through the tank to the air valve: said conduit means attached to the bottom of the tank supporting said air valve and said air valve linkage means in position within said tank; said air valve and said air valve linkage means located below the top of the tank a distance sufficient that when the top of the tank moves downwardly relative to the tank bottom, the top of the tank will not strike the air valve or the air valve linkage means; and whereby during said downward movement of the top of the tank, said conduit means support the air valve and the air valve linkage means in position within the tank.

4,239,060

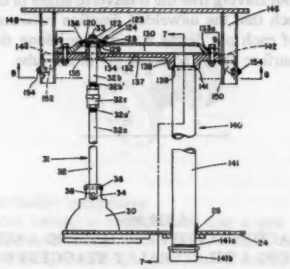
AUTOMATIC AIR INLET AND OUTLET VALVE ASSEMBLY HAVING UPPER CHAMBER OPENING

Patricia S. Stoller, Plymouth, Mich.; John A. Krug, Jr., St. Charles, and Gerald D. Garner, Florissant, both of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Division of Ser. No. 35,862, May 3, 1979, which is a continuation of Ser. No. 808,916, Jun. 22, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,455

Int. Cl.[3] F16K *24/00*

U.S. Cl. 137—587 12 Claims



1. An automatic air inlet and outlet valve assembly which automatically opens and closes when a bottom operable tank lading valve is opened and closed comprising:

an air valve mounted adjacent the top of the tank movable between open and closed position relative to a chamber opening into a chamber in fluid communication by means of conduit means with an opening in the bottom of the tank; said air valve being automatically operated when said lading valve opens and closes by air valve linkage means including an operating shaft which extends from the lading valve up through the tank to the air valve; said conduit means attached to the bottom of the tank and supporting said air valve and said air valve linkage means in position within said tank; said air valve and said air valve linkage means located below the top of the tank a distance sufficient that when the top of the tank moves downwardly relative to the tank bottom, the top of the tank will not strike the air valve or the air valve linkage means; and whereby during said downward movement of the top of the tank, said support means supports the air valve and the air valve linkage means in position within the tank.

4,239,061

DAMPER VALVE

Harley G. Peterson, La Crescenta, Calif., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

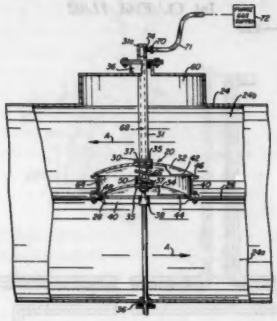
Filed Jun. 27, 1977, Ser. No. 810,657

Int. Cl.[3] F16K *1/00;* B01D *46/42*

U.S. Cl. 137—614.11 8 Claims

1. In an elongated gas flow conducting means including valved aperture means for selectively controlling gas flow therewithin, a damper valve means comprising:

Valve seat means associated with such aperture means and including at least a pair of seat portions spaced apart in the direction of gas flow through said conducting means; a valve actuator assembly including an elongated support extending within said gas flow conducting means along an axis and axially moveable with respect to said seat portions; said actuator assembly including a valve head assembly having at least a pair of axially spaced damper valve head means carried by said elongated support and each engageable with a respective one of said seat portions and bias means cooperable with said head means and stop means on said elongated support to permit axial movement of both of said head means with respect to each other axially of said support, and said seat portions being cooperable with said valve head assembly to effect sequential engagement of said head means with the respective said seat portions upon such selective axial movement of said support means to close said conducting means to interrupt gas flow within said gas flow conducting means by forming a respective pair of sealed interfaces.



4,239,062

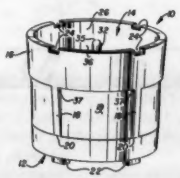
METHOD AND APPARATUS FOR PROTECTING PIPE THREADS

Jerry D. Callicoatte, Midland, Tex., assignor to Texas Plastics Industries, Inc., Midland, Tex.

Continuation-in-part of Ser. No. 888,169, Mar. 20, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 19,115

Int. Cl.[3] B65D *59/06*

U.S. Cl. 138—96 R 17 Claims



1. A deformable pipe thread protector comprising:

a. a hollow body member in a form of a sleeve having a central longitudinal axis and opposed ends formed by spaced planes which are perpendicular to the longitudinal axis;

b. a circumferentially outwardly extending shoulder at the marginal large diameter end, radially spaced outer ribs which are a continuation of said shoulder and which terminate in spaced relationship respective to the small diameter marginal end;

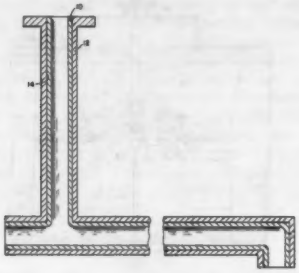
c. said ribs lie along an imaginary line which intersect at a common point located on the longitudinal axis at a location spaced from said protector apparatus.

4,239,063

MANIFOLD INSULATED WITH KNITTED IMPREGNATED SLEEVE

Richard L. Long, Rowland Heights, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 29, 1978, Ser. No. 891,255
Int. Cl.³ F16L *11/02*
U.S. Cl. 138—123 2 Claims



1. A thermal protection system comprising a manifold section, a knitted one piece, continuous, unseamed, configured sleeve of one thickness that is configured to fit an inside diameter surface of said manifold section to be lined, said sleeve being made of quartz fabric, said sleeve being impregnated with an uncured phenolic resin bonding agent, and said sleeve with said uncured bonding agent being cured and bonded to the inside diameter surface of said manifold section to insulate the manifold section.

4,239,064

INSULATION TUBES AND PROCESS OF MAKING SAME

Richard Gilman, Gilman, Conn. 06336

Filed Jan. 15, 1979, Ser. No. 3,262
Int. Cl.³ F16L *9/16*; B65N *81/00*; D03D *13/00*
U.S. Cl. 138—154 21 Claims

1. An insulation tube comprising at least two welded coiled plies, each ply being formed of a web of foamed thermoplastic polymer set into a coiled configuration, a radially facing surface of each web is welded to a radially facing surface of an adjoining web, but the axially facing edges on each coiled web are not welded together, adjacent plies being arranged such that the coils of one ply are offset from the coils of an adjacent ply, and a line defining the junction between the unwelded axial edges of each ply extends along the radially facing surface of an immediately adjacent ply, at least one ply being formed of a tearable material, such that applying a sharp axial tensile stress to the tube causes a tearing of one ply along the junction line defined by an adjacent ply so as to form a free, multi-ply coil suitable for wrapping about a pipe and the like.

14. Process for forming a unitary tube capable of being readily torn into a free helical coil, the process comprising:

(1) heating, to above the heat sealing temperature, a surface of a first web and a second web each formed of a foamed thermoplastic polymer, wherein one of the webs is formed of tearable material;

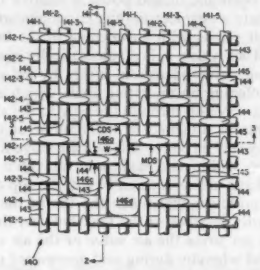
(2) coiling the two webs in an overlapping, offset relationship to form a multi-ply tube, each web forming one ply, and welding the adjacent surfaces of the two webs together but leaving free the transverse edges of each coiled web, such that the unwelded junction between adjacent edges of each ply define a spiral line along the radially facing surface of the adjacent ply in the tube.

4,239,065

PAPERMACHINE CLOTHING HAVING A SURFACE COMPRISING A BILATERALLY STAGGERED ARRAY OF WICKER-BASKET-LIKE CAVITIES

Paul D. Trokhan, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 9, 1979, Ser. No. 19,028
Int. Cl.³ D03D *15/00*
U.S. Cl. 139—383 A 17 Claims



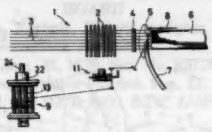
1. A loop of fabric for use on a papermaking machine, said fabric comprising a first set of filaments which filaments are disposed generally parallel with respect to each other and a second set of filaments which filaments are generally disposed in parallel relation to each other and which filaments are relatively steeply angularly disposed with respect to the filaments of said first set of filaments, said sets of filaments being interwoven and complementarily serpentinely configured to provide a predetermined first grouping of coplanar top-surface-plane crossovers of both said sets of filaments, and a predetermined second grouping of recessed sub-top-surface crossovers, said top-surface-plane corssovers being in spaced relation to define an array of wicker-basket-like cavities which cavities are disposed in a sufficiently staggered relation in both the machine direction and the cross machine direction to preclude adjacent said cavities being aligned in either the machine direction or the cross machine direction, each said cavity spanning at least one said sub-top-surface crossover and perimetrically enclosed by a picket-like-lineament comprising a plurality of said top-surface-plane crossovers.

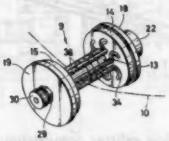
4,239,066

YARN FEEDER

Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 17, 1979, Ser. No. 58,254
Int. Cl.[3] D03D 47/36
U.S. Cl. 139—452 8 Claims





1. A yarn feeder comprising:

(a) a spool having a hollow shaft and a pair of circular flanges on the ends of said hollow shaft, each of said circular flanges having a plurality of radial guide slots angularly spaced from each other;

(b) a spindle extending through said hollow shaft and rotatable therein;

(c) a pair of spaced drive gears fixed to said shaft and disposed at the axial ends of said spool;

(d) a plurality of spaced pairs of driven gears rotatably mounted on said flanges, respectively, the driven gears in each pair being axially aligned with each other, said drive gears being held in driving mesh respectively with the pairs of the driven gears; and

(e) a plurality of rods extending axially along and disposed radially around said shaft, each of said rods having a pair of end portions connected eccentrically to the respective driven gears in one pair through a corresponding pair of the guide slots in said flanges, whereby said rods can move radially outwardly from and inwardly to said shaft in response to rotation of said spindle.

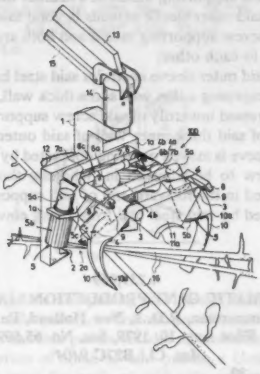
4,239,067

APPARATUS FOR BULK-LOPPING, BUCKING AND PRESTACKING IN FOREST HARVESTING

Sakari Mononen, Nurmijärvi, Finland, assignor to Finncombi Sakari Mononen Ky, Finland

Filed Dec. 18, 1978, Ser. No. 970,178
Claims priority, application Finland, Dec. 21, 1977, 773887
Int. Cl.[3] B27L 1/00; A01G 23/08
U.S. Cl. 144—2 Z 11 Claims

1. Apparatus for lopping one or more felled trees in bulk and bucking and prestacking the same comprising: a frame adapted to be connected to one end of a boom; a pair of lifting and lopping arms pivotally mounted at their respective ends to said frame, said arms each having a lopping blade associated therewith, and being pivotally movable between an open position wherein said arms extend substantially downwardly to engage one or more tree trunks therebetween and a closed position where said arms are moved inwardly towards each other to suitably locate the one or more tree trunks for subsequent lopping and means for feeding the one or more tree trunks past said lopping blades including at least two movable feed rolls pivotally mounted to said frame slightly spaced from each other in the longitudinal tree trunk feeding direction, said feed rolls being pivotally movable between an open position and a closed tree trunk feeding position, and at least two fixed counter-rolls mounted to said frame slightly spaced from each other in the longitudinal tree trunk feeding direction, and wherein when the feed rolls are in their closed tree trunk feeding position the axes of rotation of said feed rolls and counter-rolls



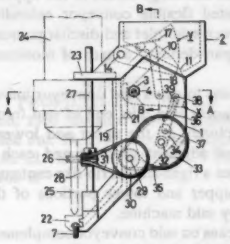
when viewed in the longitudinal tree trunk feeding direction mutually cross to define an enclosed feeding pocket whose configuration is adapted to conform to the one or more tree trunks being fed.

4,239,068

SCREW FEEDING APPARATUS

Kunimasa Maruo, 3-1-27 Nishi-Kojiya, Ohta-ku, Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 962,176
Claims priority, application Japan, Nov. 20, 1977, 52-139202
Int. Cl.[3] B23Q 7/12
U.S. Cl. 81—462 8 Claims



1. An apparatus for arranging and supplying screws, comprising a first oscillating member provided in an opening of a hopper and designed to guide the screws by taking threaded shafts of said screws into a guide groove while supporting said screws at their neck portions;

a second oscillating member also provided in said opening of said hopper and designed to move to and fro interlockingly with the movement of said first oscillating member apart from the upper portion of said first oscillating member by a distance substantially corresponding to the thickness of the head of said screws;

an elastic member provided in the forward end of a screw supporting means adapted to receive the screws individually each coming past through said guide groove and through a gate plate which is located in path of said screws and adapted to be closed or opened from outside of the apparatus;

a hole to receive therein a steel ball formed in the forward end portion of said screw supporting means, a distance between said hole and the forward end of said screw

supporting member being arranged to be longer than at least the thickness of the head of said screws;

an outer sleeve provided around said forward end portion of said screw supporting means in a manner that the forward end of said outer sleeve extends beyond said forward end of said screw supporting means and both are slidable with respect to each other;

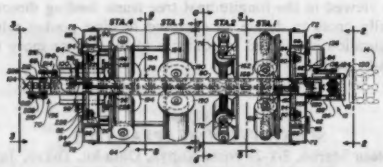
wherein said outer sleeve encircles said steel ball by its inner wall comprising a thin wall and a thick wall, said steel ball being pressed inwardly of said screw supporting means by means of said thick inner wall of said outer sleeve as the outer sleeve is moved on being contacted by the surface of the screw to be screwed in, whereby the screw being supported in the forward end of said supporting means is prevented by said steel ball from being elevated.

4,239,069

AUTOMATIC CANT PRODUCTION MACHINE

Edwin H. Zimmerman, R.D. 1, New Holland, Pa. 17557

Filed Aug. 10, 1979, Ser. No. 65,509
Int. Cl.³ B27C 9/04
U.S. Cl. 144—39 25 Claims



1. A machine to produce from round logs a cant of four sides at right angles to each other and comprising in combination,

(a) an elongated base frame having log inlet means at one end and cant discharge means at the opposite end,

(b) an elongated flexible conveyor extending along said frame between said inlet and discharge means and having an upper span defining a path of movement along said frame,

(c) power means to drive said conveyor uni-directionally,

(d) means adjacent said inlet end of said frame operable to form respectively on the upper and lower surfaces of a log, pairs of adjacent grooves and each pair defining therebetween a right-angled rib-like cant corner extending along the upper and lower portions of the cant to be produced by said machine,

(e) support means on said conveyor complementary in cross-section to said cant corner in the bottom surface of said log to accurately guide and support said log along said path of movement,

(f) additional guide means parallel to said conveyor and spaced thereabove a distance substantially equal to the diagonal cross-sectional dimension of the cant to be formed by said machine and having a cross-sectional shape complementary to and engaging said cant corner in the upper surface of said log and cooperating with said support means on said conveyor to firmly engage said log for the entire movement thereof along said path of movement, and

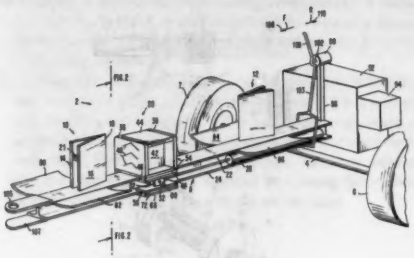
(g) cutting means spaced along said path of movement sequentially to remove slab areas and sections respectively from the opposite sides of the upper and lower portions of said log to form flat sides on said cant while said log moves only longitudinally along said path in fixed axial position from the inlet to the discharge ends of said frame as guided by said conveyor and said additional guide means in engagement with the lower and upper cant corners.

4,239,070

LOG SPLITTER

Thomas H. Buras, Holmes, N.Y., assignor to Buras Double Split, Inc., Holmes, N.Y.

Filed Apr. 20, 1979, Ser. No. 31,768
Int. Cl.³ B27L 7/00
U.S. Cl. 144—193 A 11 Claims



1. A hydraulic log splitter comprising:

a fixedly mounted supporting frame;

first and second log splitting wedges mounted on said frame at fixed positions relative to one another;

ram means slideably mounted on said supporting frame for movement between said first and second log splitting wedges; and

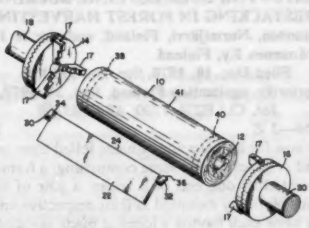
first and second two-way hydraulic cylinder means, and means on opposing sides of said frame connecting said first and second two-way hydraulic cylinders to opposite sides of said ram means for applying substantially equal forces to the opposite sides thereof, to drive said ram means towards said first log splitting wedge on the forward stroke of said first and second two-way hydraulic cylinder means, and to drive said ram means towards said second log splitting wedge on the return stroke of said first and second two-way hydraulic cylinder means.

4,239,071

SYSTEM FOR PRODUCING VENEER FROM DETERIORATED CORE LOGS

Lloyd I. Ritchie, 17810 Burke Pl. N., Seattle, Wash. 98133

Filed Feb. 22, 1979, Ser. No. 14,073
Int. Cl.² B27L 5/00
U.S. Cl. 144—209 R 8 Claims



1. A method of producing veneer from a deteriorated or hollow core log, comprising the steps of:

securing the log substantially at or near its outer circumferential surface by means of rotatable securing means; rotating said securing means whereby said log is rotated about its longitudinal axis;

cutting two kerfs in the log, each kerf extending around the circumference of the log; and

bringing a veneer blade to bear against the portion of the rotating log between the kerfs such that a sheet of veneer

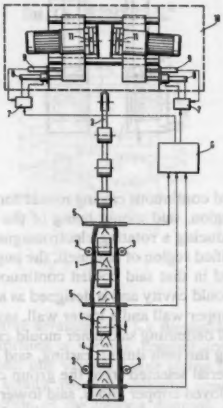
is cut from said log portion, the veneer blade having a length no less than the distance between the inner kerf edges and no greater than the distance between the outer kerf edges.

4,239,072

METHOD AND APPARATUS FOR EDGE-TRIMMING A BOARD

Heikki Meriläinen, Karhula, Finland, assignor to A Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Aug. 29, 1978, Ser. No. 937,757
Claims priority, application Finland, Sep. 27, 1977, 772835
Int. Cl.[3] B27B *7/00*; B27C *1/08*
U.S. Cl. 144—312 6 Claims



3. An apparatus for edge trimming a board which has two unfinished sides, said apparatus comprising: means for centering said board symmetrically in relation to a feeding line, a measuring device mounted along said feeding line for determining the optimum trimming direction and trimming width of said board; an edge trimming device for trimming the sides of said board, said edge trimming device comprising two oppositely spaced adjustable cutter heads disposed on opposite sides of said feeding line; computer means for adjusting said cutter heads in relation to each other in response to said measuring devices determinations; said computer means defining means for longitudinally guiding the board in such a manner that it passes from the measuring device into the edge trimming device and through it without changing said board's position in relation to the feeding line and further defining means for transversely moving the said cutter heads in relation to the longitudinal axis of said board while maintaining said adjusted relationship between said cutter heads.

4,239,073

PROPELLANTS IN CASELESS AMMUNITION

Russell Reed, Jr., Ridgecrest, Calif.; William O. Munson, and John A. Peterson, both of Brigham City, Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Jan. 17, 1973, Ser. No. 329,257
Int. Cl.[3] C06B *45/10*
U.S. Cl. 149—19.91 3 Claims

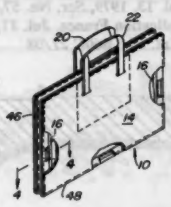
1. A gun propellant composition comprising a major amount of a finely divided deflagrating component selected from cyclotetramethylene tetranitramine, cyclotrimethylene trinitramine, ammonium nitrate, ammonium picrate, ammonium bitetrazole and mixtures thereof, and a minor amount of a binder which is poly(lauryl methacrylate).

4,239,074

CARRYING CASE

Ralph J. Kahn, Elkins Park, Pa., assignor to Schlesinger Brothers, Inc., Camden, N.J.

Filed Sep. 10, 1979, Ser. No. 74,227
Int. Cl.[3] A45C *3/02*, *13/36*
U.S. Cl. 150—1.6 7 Claims



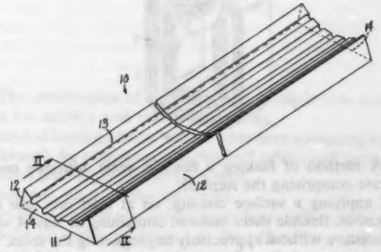
1. A carrying case comprising side panels, end panels connected to the side panels, a bottom panel connected to the lower edges of the side panels, handle means connected to the upper end portion of some of said panels, a U-shaped metal reinforcement strip for each of said side panels, a separate preformed sleeve on each of the bight portion and leg portions of said reinforcement strips, each sleeve having an extension along one edge thereof, and means securing each extension to the inner surface of one of said side panels, said means also securing each extension to an adjacent one of the end and bottom panels.

4,239,075

PROFILED TIRE TREAD

John A. Hedlund, 1300 Morrical Blvd., Findlay, Ohio 45840

Filed Jul. 14, 1977, Ser. No. 815,547
Int. Cl.[3] B60C *11/00*; B29H *17/37*
U.S. Cl. 152—209 R 21 Claims

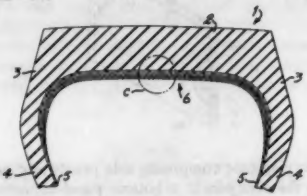


1. A tire tread for retreading a tire casing, comprising, an elongated body portion of cured material having:
a bonding surface adapted for bonding to a tire casing, and
a road contacting surface adapted to engage a road, said road contacting surface being oppositely disposed and spaced apart from said bonding surface and being concave in transverse cross-sectional profile so as to resistingly assume a generally flat cross-sectional profile when said bonding surface is bonded to a tire casing.

4,239,076
PNEUMATIC TIRE WITH PUNCTURE-SEALING LINING COMPRISING VULCANIZABLE AND VULCANIZING LAYERS

Jean Chautard, Mozac, and Andre Chemizard, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jul. 13, 1979, Ser. No. 57,440
Claims priority, application France, Jul. 17, 1978, 78 21347
Int. Cl.³ B60C *21/08*
U.S. Cl. 152—347 17 Claims

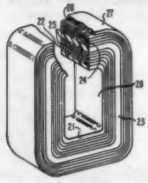


1. A pneumatic tire whose inner wall is provided, at least from one shoulder to the other, with a lining containing at least one means for sealing puncture holes, characterized by the fact that the lining comprises at least one layer of a vulcanizable sealing mixture separated by a vulcanized elastomeric partition from at least one layer of a vulcanizing mixture capable of vulcanizing the vulcanizable sealing mixture, each of the layers containing between 20% and 100% by weight of an elastomer of low molecular weight less than about 30,000, wherein the elastomer of the vulcanizable sealing mixture consists essentially of an unsaturated elastomer and wherein the elastomer of the vulcanizing mixture consists essentially of a saturated elastomer.

4,239,077
METHOD OF MAKING HEAT CURABLE ADHESIVE COATED INSULATION FOR TRANSFORMERS

George D. Dixon, Monroeville, and Edward J. Croop, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 1, 1978, Ser. No. 965,554
Int. Cl.² B05D *3/06*
U.S. Cl. 156—272 8 Claims



1. A method of making a flexible, resin adhesive coated substrate comprising the steps of:

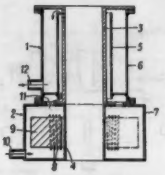
(A) applying a surface coating, on at least one side of a porous, flexible sheet material containing at least 4 wt.% moisture without appreciably impregnating the sheet, said coating consisting of a wet, heat reactive adhesive resin, having added thereto from about 10 parts to about 80 parts per 100 parts heat reactive resin of a monomer selected from the group consisting of acrylic monomer, vinyl monomer and mixtures thereof, and an amount of an ultraviolet radiation sensitive photoinitiator effective to cause polymerization of monomer in response to ultraviolet radiation;

(B) applying ultraviolet radiation to the adhesive resin coating on the sheet material, in a manner and for a time effective to polymerize monomer without the application of heat so that the sheet material retains at least 3.5 wt.% moisture, to form a flexible substrate with a dry, uncured surface coating of adhesive bonded to the sheet material, said adhesive being curable by the application of heat.

4,239,078
COOLED CONTINUOUS CASTING MOULD

Bruno Tarmann, Kapfenberg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Mar. 21, 1979, Ser. No. 22,517
Claims priority, application Austria, Mar. 23, 1978, 2073/78
Int. Cl.³ B22D *27/02, 11/10*
U.S. Cl. 164—147 9 Claims

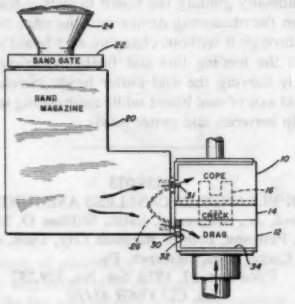


1. In a cooled continuous casting mould for a melt having an unsolidified region, said mould being of the type including a means for producing a rotating electromagnetic field of force in said unsolidified region of said melt, the improvement which is characterized in that said cooled continuous casting mould has an inner mould cavity and is designed as a compound body formed of an upper wall and a lower wall, said upper wall and said lower wall delimiting said inner mould cavity for contacting and shaping the melt during casting, said upper wall being made of a material selected from the group consisting of copper and low-alloyed copper alloys, said lower wall being made of an antimagnetic material with low electrical conductivity, said means for producing a rotating electromagnetic field of force being an induction means surrounding said lower wall.

4,239,079
SAND DEFLECTOR FOR AUTOMATIC MOLDING MACHINE

Joseph Simmons, R.D. 1, Box 163A, Morgantown, Pa. 19543

Filed May 30, 1979, Ser. No. 43,839
Int. Cl.³ B22C *15/24, 21/12*
U.S. Cl. 164—200 6 Claims



1. Apparatus for use on an automatic molding machine of the type for making a mold of a pattern by blowing sand through outlet passageways of a sand magazine into a fixed cope and a movable drag, said apparatus comprising a deflector mounted on said movable drag below an upper edge thereof and extending into the interior thereof, said deflector being a rectangular

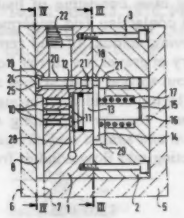
prism and having at least one sand inlet channel through said prism arranged at an angle of 19° in relation to a reference line perpendicular to a surface (62) on said deflector used for mounting said deflector in said drag, whereby sand passing from the outlet passageway of the sand magazine through the at least one sand inlet channel is deflected downwardly onto the floor of the drag and then upwardly into said pattern.

4,239,080

DIECASTING VENTING VALVE

Fritz Hodler, Chemin du Chatagny 3, CH 1820 Territet, Switzerland

Filed Nov. 16, 1978, Ser. No. 961,533
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1977, 2751431
Int. Cl.³ B22D *17/22*
U.S. Cl. 164—305 11 Claims



1. A venting valve arrangement for diecasting molds, said arrangement comprising a venting conduit for venting the mold cavity, at least one venting valve piston in the venting conduit, several axially parallel adjacent actuating pistons exposed to the action of the casting material, the actuating pistons and the venting valve piston having substantially parallel axes, a follower loosely interconnecting the venting valve piston with the actuating pistons, said several axially parallel adjacent actuating pistons all acting upon a common transmission piston, the follower projecting towards the venting valve piston in a radial direction with respect to said transmission piston, and means positively attaching said follower to said at least one of the venting valve pistons and with said follower providing a positive interlock of the venting valve piston with the actuating pistons.

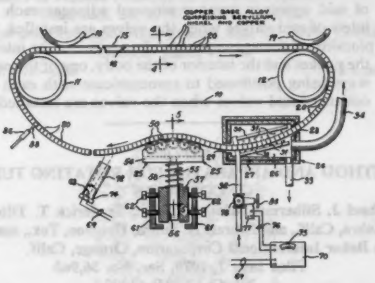
4,239,081

SIDE DAM APPARATUS FOR USE IN TWIN-BELT CONTINUOUS CASTING MACHINES

Paul J. Kranz, Westfield, N.J., assignor to Asarco Incorporated, New York, N.Y.

Filed May 30, 1979, Ser. No. 43,921
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—431 8 Claims

1. Side dam apparatus adapted for use in a twin-belt continuous casting machine wherein two spaced-apart side dams each revolve in a loop and travel along a casting zone from its input end to its output end between a pair of revolving spaced-apart casting belts thereby defining a moving mold, the side dams returning from the output end to the input end of the casting zone along a return path located away from the casting zone, the side dams each comprising a multiplicity of dam blocks secured to a flexible continuous securing means, the dam blocks each being formed of a copper base alloy comprising beryllium, nickel and copper, the alloy characterized by being a wrought alloy having a hardness in excess of 90 Rockwell B and a conductivity in excess of 35% IACS, the blocks being resistant to intergranular cracking over a prolonged period of exposure to elevated temperatures up to about 800° F., said alloy comprising by weight, beryllium in amount in excess of a trace but not more than 0.6% of the alloy, and the nickel in amount greater than the beryllium but not more than 2.1% of



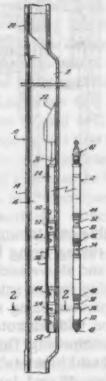
the alloy, the total of nickel plus beryllium plus copper being 99.5% minimum.

4,239,082

MULTIPLE FLOW VALVES AND SIDEPOCKET MANDREL

Ben D. Terral, Houston, Tex., assignor to Cameo, Incorporated, Houston, Tex.

Filed Mar. 23, 1979, Ser. No. 23,061
Int. Cl.² E21B *23/02*
U.S. Cl. 166—117.5 1 Claim



1. The combination of a mandrel and multiple flow control valves for use in a well tubing comprising,

a mandrel having a body with an open bore extending therethrough for alignment with the well tubing and having an offset bore adjacent the open bore,

orientation means in the open bore,

a pocket positioned inside the body in the offset bore,

a deflector guide positioned in the offset bore above the pocket,

a locking shoulder secured in the body and aligned with the pocket,

a plurality of vertically connected but independently actuated gas lift valves each having an inlet and an outlet for positioning in the pocket, each said valve having a pressure charged bellows positioned above and acting downwardly against a valve element in a direction to close said valve,

a single latch connected to the valves for engagement with the locking shoulder for locking the valves in the pocket,

said pocket being of a vertical length sufficient for receiving the valves,

a plurality of vertically spaced openings extending between the interior of the pocket and the outside of the body, one of said openings being positioned adjacent each of the inlets of said valves when the valves are installed, and

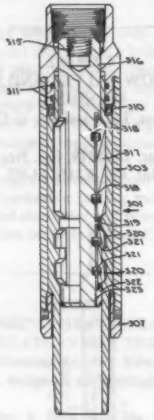
a plurality of passageways extending between the interior of the pocket and the interior of the body, one of the passageways being positioned to communicate with each of the outlets of said valves when the valves are installed.

4,239,083

METHOD AND APPARATUS FOR ROTATING TUBING CONDUITS

Raphael J. Silberman, Houston, Tex.; Frederick T. Tilton, La Habra, Calif., and Everett H. Smith, Houston, Tex., assignors to Baker International Corporation, Orange, Calif.

Filed May 7, 1979, Ser. No. 36,963
Int. Cl.³ E21B *43/00*
U.S. Cl. 166—117.7 **10 Claims**



1. An apparatus carriable on a tubing string extendible into a subterranean well, said tubing string having an upper tubing section extendible from and above said apparatus to the top of the well and a lower tubing section extendible from and below said apparatus, said apparatus being manipulatable to rotate said lower tubing section without rotating said upper tubing section, said apparatus comprising: first and second housings, one of said housings and said lower tubing section being rotatable relative to the other of said housings; actuator means mechanically manipulatable by means extending to the top of the well, said actuator being insertable and removable within at least one of said housings for selectively applying rotation to one of said housings; and co-engaging means carried on said actuator means and one of said housings for applying rotational force to one of said housings and said lower tubing section to rotate said one housing and said lower tubing section without rotating the other of said housing and said upper tubing section.

4,239,084

ACID SOLUBLE COATING FOR WELL SCREENS

Keith W. Sharp, Sugarland, Tex., and Derry D. Sparlin, Lafayette, La., assignors to Baker International Corporation, Orange, Calif.

Division of Ser. No. 909,318, May 24, 1978, Pat. No. 4,202,411. This application Jul. 11, 1979, Ser. No. 56,388
Int. Cl.³ E21B *37/08, 43/04, 43/08, 43/10*
U.S. Cl. 166—278 **3 Claims**

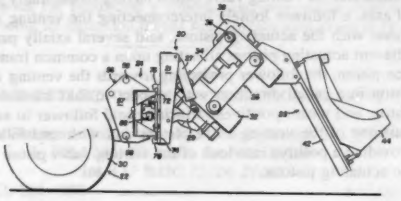
3. A method of gravel packing a washed out section in and unconsolidated formation penetrated by a well casing having perforations opening into said washed out section, comprising the steps of: (1) lowering a fluid conduit in said well, said conduit having a well liner comprising an elongate tubular member having a plurality of passageways disposed longitudinally and circumferentially of, and extending from the outer surface to the inner surface of the tubular member, and an impermeable inorganic matrix comprising the reaction product of a first reactant consisting essentially of magnesium oxide and a second reactant consisting essentially of magnesium chloride, in an aqueous solvent therefor, said matrix substantially filling said passageways and coated upon at least one of said inner and outer surfaces; (2) positioning said elongate tubular member opposite said perforations; (3) injecting through said fluid conduit and said well liner a removing solution to remove said impermeable inorganic matrix from said surfaces of said tubular member and said passageways, said removing solution comprising an aqueous carrier fluid having therein a reactant selected from the class consisting of hydrochloric acid and sulfamic acid; (4) contacting said impermeable inorganic matrix with a removing amount of said removing solution; (5) circulating a slurry of gravel in a carrier liquid in said well and into said washed out section while at least a part of said carrier liquid returns to the top of said well through said passageways and said well liner, thereby depositing said gravel in said washed out section and against said elongate tubular member; and (6) disconnecting said flow conduit from said well liner.

4,239,085

SIDE SHIFT ASSEMBLY FOR EARTH-WORKING IMPLEMENTS

Phillip G. Venable, Orion, Ill., and Rudolf Horsch, Davenport, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Jul. 16, 1979, Ser. No. 57,769
Int. Cl.³ E02F *3/85*
U.S. Cl. 172—667 **13 Claims**



1. A side shift assembly for a ground working implement slidably mounted on a prime mover comprising:

a frame assembly mounted on said prime mover having laterally extending upper and lower slide rails;

an implement support bracket mounting said ground working implement on one of said slide rails for lateral movement relative to said prime mover;

an intermediate slide plate slidably mounted between said upper and lower slide rails for lateral movement relative to said slide rails;

an extensible and retractable fluid operated piston-cylinder operably connected at one end to said frame assembly and at its other end to said intermediate slide plate;

releasable latching means mounted on said slide plate for selectively connecting said slide plate to said implement support bracket, said support bracket having spaced apart connection portions and said latching means having a releasable connector selectively engageable with said connection portions on said support bracket;

said implement being laterally shiftable relative to said prime mover by said side shift assembly such that when said piston-cylinder is fully retracted and said releasable connector is engaged with one of said connection portions on

said support bracket, said implement being substantially centered on said frame assembly and actuation of said piston-cylinder causing said implement to move laterally in a first direction and then back to the center of said frame assembly; and

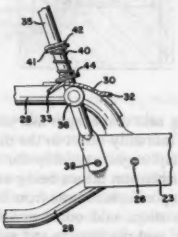
when said piston-cylinder is fully extended and said releasable connector is engaged in another of said connection portions of said support bracket, said implement being substantially centered on said frame assembly and actuation of said piston-cylinder causing said implement to move laterally in a direction opposite to said first direction and then back to the center of said frame assembly.

4,239,086

LIFTING MECHANISM WITH CAM

Robert R. Yeager, Union City, Ohio, assignor to Lambert Corporation, Dayton, Ohio

Division of Ser. No. 714,282, Aug. 13, 1976, Pat. No. 4,131,221. This application Sep. 13, 1978, Ser. No. 942,066
Int. Cl.³ A01B *63/04*
U.S. Cl. 172—680 **2 Claims**



1. For use with a gardening apparatus, a lift mechanism for attaching the apparatus to a garden tractor and for lifting the gardening apparatus when attached thereto, the tractor including a hitch for engaging and supporting the lift mechanism, comprising:

(a) a frame bracket attachable to the tractor hitch,

(b) first pivot means defining a substantially horizontal first axis of rotation for pivotally attaching the gardening apparatus to the frame bracket for supporting and drawing the gardening apparatus and for pivoting the gardening apparatus upwardly and downwardly thereabout between respective up and down positions,

(c) a lifting handle,

(d) second pivot means pivotally attaching said lifting handle to said frame bracket for rotation about a second axis of rotation displaced from and substantially parallel to said first axis of rotation,

(e) a lift plate attachable to the gardening apparatus along a path extending toward and away from said first pivot means,

(f) means forming a slot in said lift plate, and said lifting handle being received in said slot for movement therethrough as said handle is pivoted about said second pivot,

(g) bearing means supported on said handle beneath said lift plate for engaging and camming against said lift plate to rotate the gardening apparatus about said first pivot as said handle is rotated about said second pivot to drive said bearing means against said lift plate for rapidly and easily raising and lowering the gardening apparatus, and

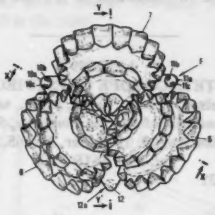
(h) spring means mounted on said lifting handle above said lift plate and in downward compression thereagainst for biasing the gardening apparatus downwardly when in the down position to augment the downward bias on the apparatus due to gravity.

4,239,087

DRILL BIT WITH SUCTION JET MEANS

Yvon Castel, Pau, and Henri Cholet, Le Pecq, both of France, assignors to Institut Francais du Petrole, France

Filed Jan. 26, 1978, Ser. No. 872,455
Claims priority, application France, Jan. 28, 1977, 77 02689
Int. Cl.² E21B *10/18*
U.S. Cl. 175—340 **13 Claims**



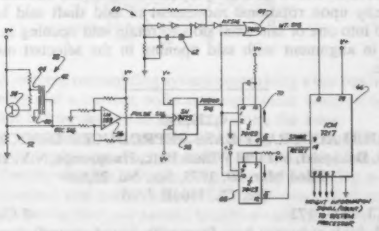
1. A drill bit comprising a body member rotatable by a bit holder, said body member being provided with a recess which can be supplied with a pressurized fluid through the bit holder, a plurality of rotatable elements carried by the body member and provided with ground cutting means in contact with the hole bottom, said body member being provided with flushing means for delivering at least one flushing fluid jet directed towards the hole bottom, said flushing means being in direct communication with said recess and opening in a first space comprised between two adjacent rotatable elements, and said body member also being provided with eduction means for the drilling fluid which has flushed the rotatable elements, said eduction means being adapted to deliver at least one upwardly directed fluid jet, said eduction means comprising at least one aperture provided in said body member and located above a second space comprised between two adjacent, rotatable elements, the flushing means of said drill bit comprising at least one flushing nozzle located in said first space, said nozzle being provided at its lower part with at least two apertures having substantially symmetrical locations on both sides of a bissector plane of said first space, said two apertures being adapted to create fluid jets respectively directed downwardly and towards the two rotatable elements between which said first space is defined, so as to contact said elements substantially at the hole bottom.

4,239,088

SCALE WITH WEIGHT-TO-PERIOD TRANSDUCER

Frank T. Check, Orange, and Keith E. Schubert, West Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 8, 1979, Ser. No. 1,622
Int. Cl.³ G01G *3/13*
U.S. Cl. 177—210 FP **9 Claims**



1. A scale comprising a frame, load carrying means for

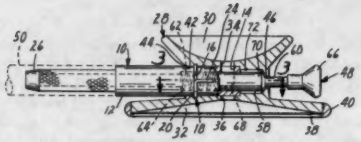
carrying an article to be weighed, transducer means, means fixedly supporting the transducer means with respect to the frame, force transmitting means interconnecting the load carrying means and the transducer means, means actuating the transducer means to provide an oscillatory signal, the period of oscillation of which varies as a function of the weight of the load and means receiving the oscillatory signal and generating a period signal indicative of full cycles of oscillation of the oscillatory signal and in response thereto measuring the duration of its period of oscillation to provide an article weight signal.

4,239,089

STETHOSCOPE CHESTPIECE

Frederick W. Nelson, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 9, 1979, Ser. No. 65,146
Int. Cl.³ A61B 7/02
U.S. Cl. 181—131 **5 Claims**



1. In a stethoscope chestpiece comprising a body member forming axially opposed diaphragm and bell microphones, said body member having a cylindrical recess interposed between said microphones; means forming aligned openings from the apex of each of said microphones communicating with said recess; a tubular shaft rotatably secured within said cylindrical recess; means forming an opening through the wall of said shaft adapted on rotation of said shaft to be aligned selectively with either of said openings in said microphones; means for rotatably securing said shaft within said recess against axial movement; and means for selectively aligning said opening in said shaft with either of said openings in said microphones, the improvement wherein said means for rotatably securing said shaft within said recess against axial movement and said means for selectively aligning said opening in said shaft with the opening in a selected one of said microphones are combined in a single spring member comprising a C-shaped portion and a leg extending axially from one end of said C-shaped portion, said C-shaped portion being positioned within a first peripheral groove having a depth at least as deep as the diameter of the spring material forming said spring member, said first groove being spaced axially from said opening in said shaft and said leg being positioned within a second axial groove having a depth at least equal to the diameter of said spring material, said second groove joining said first groove; said C-shaped portion being biased partially within a circular slot in the wall of said cylindrical recess, said circular slot having a depth which is about one-half the diameter of said spring material; and said leg being received by one of two opposed axial slots in said cylindrical recess which slots are perpendicular to said circular slot whereby upon rotational movement of said shaft said leg is biased into one of said axial slots to retain said opening in said shaft in alignment with said opening in the selected microphone.

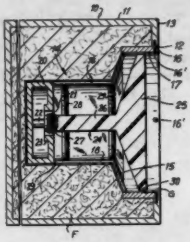
4,239,090

HIGH ACCURACY BASS REPRODUCER DEVICE

Jon G. Dahlquist, 601 Old Willets Path, Hauppauge, N.Y. 11787

Filed Mar. 29, 1979, Ser. No. 25,089
Int. Cl.³ H04R 7/16
U.S. Cl. 181—172 **7 Claims**

1. A high accuracy bass frequency sound reproducing device of the acoustical suspension type comprising an enclosure member substantially completely sealed except for an aperture, an electromagnetic transducer disposed within said enclosure and including a frame secured to said enclosure, said frame having a flange portion extending through said aperture, said flange portion including a continuous internal opening, the surfaces defining said opening being aligned parallel with the central axis of said flange, a magnet assembly on said frame including a gap defining a magnetic field, voice coil means disposed within said field and adapted to reciprocate in the direction of said axis responsive to the impression thereon of an alternating electrical current, a diaphragm assembly supported on said frame, said diaphragm assembly including an enlarged radiating portion having a rigid, free peripheral edge elongated in the direction of said axis and a reduced neck portion, said voice coil being mounted to said neck portion, suspension means interposed between said diaphragm assembly and said



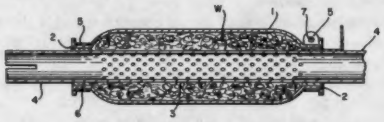
frame and engaging said diaphragm assembly and frame at at least two positions mutually offset in the direction of said axis for guiding said diaphragm assembly for said reciprocatory movements, said suspension means being attached to said diaphragm assembly at positions remote from said peripheral edge of said radiating portion, said outer peripheral edge of said radiating portion of said diaphragm and said internal opening of said flange defining therebetween a continuous circumferential gap elongated in the direction of said axis and having minimal clearances, said gap defining the sole significant flow passage between the interior and exterior of said enclosure, the total cross-sectional area of said gap being sufficiently small to maintain the acoustical stiffness reactance of the fluid medium within said enclosure at a value to restore said diaphragm assembly to a null position responsive to excursions thereof.

4,239,091

MUFFLER

Paulo M. Negrão, Largo do Arouche, no 252-apartment 501, Sao Paulo, Brazil

Filed Aug. 15, 1978, Ser. No. 933,889
Claims priority, application Brazil, Sep. 16, 1977, 5701149[U]
Int. Cl.² F01N 1/24, 7/16, 7/18
U.S. Cl. 181—243 **1 Claim**



1. A muffler, comprising a tubular synthetic resin body reinforced with glass fiber material said body having tapered extremities ending in short necks, an axial aluminum tube extending through said body, said tube being provided with extremities projecting outwardly from the body necks, said tube also being perforated in the section located inside the body, a sound-absorbent glass fiber material filling the internal space between said body and said aluminum tube, resilient gasket material interposed between said necks and said tube, said gaskets being adhered to the resin body material, clamps

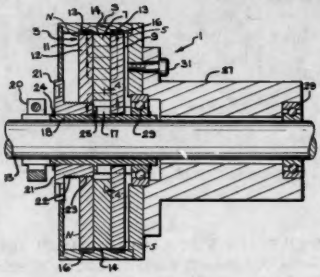
engaging around said body necks and means for tightening the clamps to retain the body parts together and to avoid leakage between the resin body and the aluminum tube.

4,239,092

ADJUSTABLE TENSIONER

Gunnar H. Janson, Dudley, Mass., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 28, 1978, Ser. No. 937,069
Int. Cl.³ F16F 15/03
U.S. Cl. 188—267 **8 Claims**



8. A magnetic tensioning device comprising a rotatable outer housing, said housing having an interior surface defining at least two radial grooves, a non-rotating shaft positioned in said housing, a magnetic assembly positioned in and spaced from said outer housing, said magnetic assembly comprising a permanent magnet, a first magnetically soft plate and a second magnetically soft plate, means securing said magnetically soft plates to opposite sides of said permanent magnet, means mounting said first plate for axial movement on said shaft, said mounting means preventing rotational movement between said first plate and said shaft, said first and second magnetically soft plates collecting and directing magnetic flux from said permanent magnet, a plurality of magnetic particles positioned between said magnetic assembly and said outer housing, said magnetic particles forming chains in the space between said magnetic assembly and said outer housing along lines of magnetic flux between said magnetic assembly and said outer housing, such chains of magnetic particles magnetically coupling said magnetic assembly and said outer housing, output means rotatably positioned on said shaft, means attaching said output means to said outer housing, and means for moving said magnetic assembly axially along said shaft to change the position of said magnetic assembly with respect to said radial grooves in said housing to vary the magnetic flux between said magnetic assembly and outer housing to in turn vary the magnetic coupling between said magnetic assembly and said outer housing whereby the resistance to turning of said outer housing and said output means is varied.

4,239,093

LUGGAGE CASE WITH BRACE

Jerry D. Eubanks, Westminster, and Charles F. Rose, Aurora, both of Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Jun. 1, 1979, Ser. No. 44,459
Int. Cl.³ A45C 13/34
U.S. Cl. 190—41 R **3 Claims**

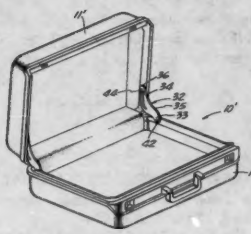
1. Apparatus for controlling the rate and extent of opening and closing a case having first and second case shell parts hinged to one another, comprising:

a plate having an elongated slot of substantially uniform width and an opening;

a first stud affixed to an inner surface of said first case shell part extending generally parallel to the hinge, which stud is rotatably received within said plate opening;

a second stud received through the slot and affixed to an inner wall of said second case shell part and terminating outwardly of said slot in an enlarged head, said second stud extending generally parallel to said first stud;

first bearing means rotatively received on the outer end of said second stud including a first portion of diameter greater than the slot width contacting the second stud enlarged head and a smaller diametral portion slidingly received within the slot;



second bearing means of diameter greater than the slot width received on the second stud with a smooth major surface facing the plate and a recessed major surface facing away from said plate; and

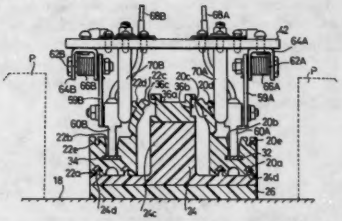
a coil spring on said second stud having parts received within the second bearing means recess and continuously resiliently urging said second bearing means against the plate to provide a resilient clamping force on the plate resisting sliding of said second stud along the slot.

4,239,094

CURRENT TRANSMITTING SYSTEM FOR TRACKWAY TYPE MOTOR VEHICLE

Hiromichi Uchiyama, Yokosuka; Eiichi Yaguchi, Yokohama; Akira Nakamura; Yoshio Maeda, both of Osaka, and Susumu Watabe, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Sumiyomo Electric Industries, Limited, Osaka, both of, Japan

Filed Jan. 3, 1979, Ser. No. 1,351
Int. Cl.³ B60M 1/34
U.S. Cl. 191—25 **32 Claims**



1. A current transmitting system comprising a bus bar mount assembly and a current collecting equipment which rides on said bus bar mount assembly to run along the same;

said bus bar mount assembly including a current carrying naked cable, an elongated body of electrically insulating flexible material having a longitudinally extending groove in which said naked cable is fixedly received, an elongated lid having first and second longitudinally extending sides, said first longitudinally extending side being integrally hinged to a section of said body so as to be swingable about said section for closing and opening said groove,

and latching means for establishing latching engagement between the second longitudinally extending side of said lid and said body on a side of the groove opposite from the section of the body to which the lid is hinged to sealingly close said groove when said lid is pressed against said body; and

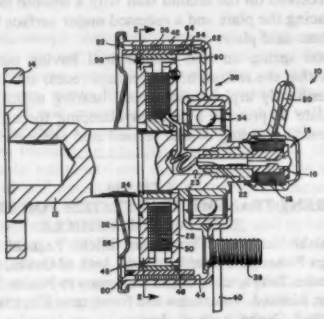
said current collecting equipment including a current collecting shoe adapted to contact said cable in said groove, a lid opending device for forcedly opening said lid upon movement of the opening device along said body in one direction thereby to enable said shoe to be in sliding contact with said naked cable in said groove, and a lid closing device for pressing the opened lid against said body upon movement of the closing device along said body in the one direction thereby to establish the latching engagement between said lid and said body.

4,239,095

SLIP BAND ELECTROMECHANICAL CLUTCH

Allen W. De Jong, Chatham, Canada, assignor to Canadian Fram Limited, Chatham, Canada

Filed Oct. 13, 1978, Ser. No. 951,103
Int. Cl.³ F16D *27/02, 47/00*
U.S. Cl. 192—84 T **21 Claims**



1. In a clutch, a pair of coaxial, relatively rotatable members comprising a driving member and a driven member, a band wrapped around one of said members, electromagnetic means carried by said one member for urging the band into driving engagement with said one member, said band including means securing said band to said other member but permitting said band to slip relative to the other member upon engagement of the clutch, said securing means thereafter providing a driving connection between said members.

4,239,096

POWER TOOL SAFETY CLUTCH

Bruno S. Smilgys, and David B. Smilgys, both of 42 Fairfield Ave., Hartford, Conn. 06114

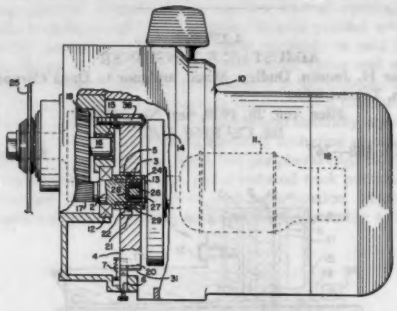
Filed Oct. 10, 1978, Ser. No. 949,898
Int. Cl.³ F16D *43/20*
U.S. Cl. 192—103 C **10 Claims**

1. A safety device for power driven tools comprising:

a motor driven spindle interconnecting a motor means and a work output means;

a wrap spring clutch interconnecting said spindle with said work output means for transmitting power therebetween; and

an inertia means operatively associated with said wrap spring clutch for initiating and effecting declutching of



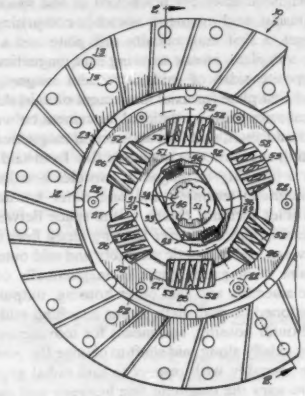
said wrap spring clutch in response to a selected movement of the power tool.

4,239,097

MULTIPLE STAGE VIBRATION DAMPER ASSEMBLY

John F. Greacen, Ypsilanti; Kerry G. Knight, Washington, and Thaddeus Lech, Jr., Roseville, all of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 14, 1978, Ser. No. 933,391
Int. Cl.³ F16D *13/68*
U.S. Cl. 192—106.2 **17 Claims**



1. A vibration damper assembly for use in a torsional coupling comprising a hub assembly operatively connected to a driven shaft, a driving plate rotatably mounted on said hub assembly, a spring retainer plate rotatably mounted on said hub assembly and secured to said driving plate for rotation therewith, said hub assembly including an inner hub and an outer hub, said inner hub having a barrel and oppositely extending flange portions having slightly converging edges tangentially intersecting said barrel and joined at the outer ends by curved edges having outwardly opening notches therein, said outer hub being sandwiched between said driving and spring retainer plates and having a central opening receiving said inner hub for limited rotation therein, said opening having a pair of parallel walls joined by a pair of curved edges complementary to the curved edges on the inner hub, each curved edge having an inwardly opening notch facing a notch in the flange portion of the inner hub, resilient means received in a pair of facing notches between said inner and outer hubs yieldably resisting

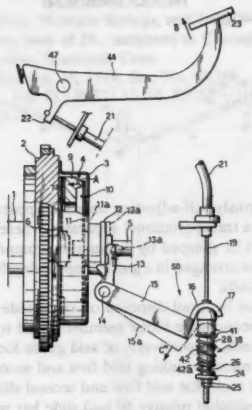
relative rotation therebetween, a plurality of circumferentially spaced aligned windows in said plates and outer hub, and at least one compression spring received within each set of windows, said relative rotation between said inner and outer hubs providing a first stage of angular displacement and said compression springs providing a second stage of angular displacement.

4,239,098

HYDRAULICALLY DAMPED AUTOMATIC PLAY COMPENSATION DEVICE FOR MOTOR VEHICLE CLUTCHES

Stefano Jacoponi, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Apr. 3, 1979, Ser. No. 26,704
Claims priority, application Italy, Apr. 12, 1978, 67809 A/78
Int. Cl.³ F16D *13/75*
U.S. Cl. 192—111 A 5 Claims



1. Hydraulically damped automatic play compensating device for a motor vehicle clutch including:

a clutch control lever which effects a working stroke upon the application of a clutch-disengaging force thereto;

means for transmitting said force, and

a fork operable by said control lever, through said means,

wherein said play compensating device comprises, in combination:

a lever attached at one end to said fork;

means supporting said lever for pivotal movement about a pivot axis at said one end;

a hydraulic damping cylinder acted upon by the other end of said lever and filled with hydraulic fluids;

a shaft coaxial with said cylinder and slidable relative thereto, said shaft being connected by said force transmitting means to said control lever;

a piston member attached to said shaft and subdividing said cylinder into two chambers, and

flow restriction means interconnecting said two chambers,

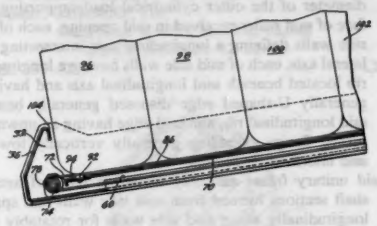
whereby, between working strokes, said cylinder is displaced relative to said shaft by an amount which compensates for wear in said clutch, the fluid pressure in said two chambers being equilibrated by flow through said restriction means, and the damping effect of said cylinder being such that, upon a subsequent working stroke, said force transmitting means transmits said force directly to said lever through said cylinder substantially without relative movement between said cylinder and said shaft.

4,239,099

AUTOMATIC FORWARD-FEED SHELF

John L. Williams, Atlanta, and Asa V. Brown, Jr., Royston, both of Ga., assignors to The Mead Corporation, Atlanta, Ga.

Filed Apr. 4, 1979, Ser. No. 26,957
Int. Cl.³ A47F *5/00*; B65G *11/00*
U.S. Cl. 193—32 6 Claims



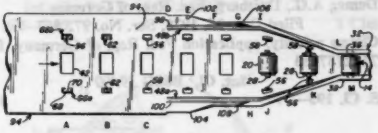
1. In a shelf having a flexible conveyor belt for supporting a plurality of articles arranged in a column and automatically feeding the articles in said column forward in a columnwise direction when the foremost article in the column is removed, at least one frictional pad located at a position underneath said conveyor belt and responsive to the presence of an article on said belt and above said position, for stopping the movement of said belt, and substantially rigid support means underlying said conveyor belt, the upper surface of said support means and the underside of said conveyor belt having a mutual coefficient of friction permitting sliding of the conveyor belt on said support means, said support means also having a recess in its upper surface, and said pad being located in said recess and having a frictional surface substantially flush with said upper surface and adapted to retard the movement of the belt by frictional engagement with the underside of the belt in response to the weight of an article located on said belt above said pad, whereby said column of articles is stopped with the foremost article located above said position.

4,239,100

PACKAGE FLOW SYSTEM

Robert L. Corey, Chicago, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Mar. 2, 1978, Ser. No. 882,731
Int. Cl.² B60G *13/11*
U.S. Cl. 193—35 R 16 Claims



7. A package flow system, comprising:

a roller assembly including

a plurality of rollers spaced longitudinally from each other;

each of said rollers having an outer cylindrical load-supporting surface for dynamically supporting a load, a plurality of circumferentially spaced ribs extending radially inward from said cylindrical load-supporting surface, and a hub connected to said radial ribs, said hub defining a lateral axis and an axial socket extending laterally along said lateral axis, and said axial socket extending laterally outward of said cylindrical load-supporting surface;

a unitary frame assembly for rotatably supporting said rollers and including a generally channel-shaped frame

having a pair of upright side walls and an intermediate section extending between and connecting said side walls, said intermediate section positioned above said lateral axis and defining a plurality of generally rectangular roller-receiving openings spaced longitudinally from each other, each of said roller-receiving openings receiving one of said rollers and having a dimension perpendicular to said lateral axis less than the maximum diameter of the outer cylindrical load-supporting surface of said roller received in said opening, each of said side walls defining a longitudinal axis intersecting said lateral axis, each of said side walls having a longitudinal rib located beneath said longitudinal axis and having a generally U-shaped edge disposed generally beneath said longitudinal rib, and said edge having an upwardly turned flange extending generally vertically towards said intermediate section;

said unitary frame assembly including pairs of arcuate shaft sections formed from said side walls and spaced longitudinally along said side walls for rotatably supporting said rollers;

each of said pairs of arcuate shaft sections being in general horizontal alignment with each other for insertion into the axial socket of one of said rollers and comprising a first arcuate shaft section extending integrally and laterally inwardly from one of said upright side walls and a second arcuate shaft section extending integrally and laterally inwardly from the other of said upright side walls towards said first shaft section, said first and second arcuate shaft sections each having an outer surface facing generally upwardly to provide an upper bearing frame surface for said roller and said first and second arcuate shaft sections being axially spaced from each other to define an axial opening therebetween, each arcuate shaft section having the shape of an inverted U and defining an upstanding arch as viewed laterally and being tapered slightly inwardly in a downward direction toward an opposite wall, and said upper bearing surface extending greater than 180 degrees about said longitudinal axis; and

a support frame having a shelf member including rib-engaging means for snap-fitting interlocking engagement with said longitudinal ribs, and base means for engaging said U-shaped edges to support said roller assembly.

4,239,101

QUICK CHANGE APPARATUS FOR GUIDE ROLLERS

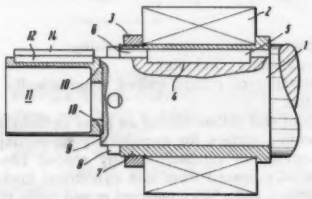
Walter Krohmann, Riegelsberg, and Ewald Gilles, Rheinberg, both of Fed. Rep. of Germany, assignors to Mannesmann Demag A.G., Duisburg, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 972,867

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757953

Int. Cl.³ B65G *39/00*

U.S. Cl. 193—37 **3 Claims**



1. In a roll mill train, including supporting shafts and roller means mounted on each of said shafts, means to align each roller means with respect to a complementary supporting shaft to facilitate placement of the roller means onto the shaft, which comprises

(a) a guide sleeve mounted to one free end of each supporting shaft,

a limited area of a portion of each guide sleeve being generally congruent with an adjacent portion of the complementary supporting shaft whereby said limited area forms a partial extension of said complementary supporting shaft, and

(c) the remaining portions of each guide sleeve being radially, inwardly offset from the remaining portions of the complementary supporting shaft whereby said remaining portions lie within the cylindrical surface defined by the imaginary projected configuration of the supporting shaft.

4,239,102

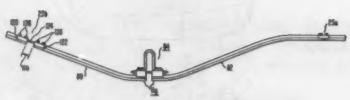
HANDRAIL APPARATUS

Henry Boltrek, Freeport, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,545

Int. Cl.³ B66B *9/14*

U.S. Cl. 198—336 **6 Claims**



1. Continuously self-adjusting handrail apparatus for use on a handrail of a transportational apparatus wherein the handrail is available to be grasped by passengers, comprising:

guide means arranged in a guide loop having first and second aligned ends,

a continuous handrail disposed on said guide means,

first and second slide block members fixed to said first and second ends, respectively, of said guide loop,

a slide bar member linking said first and second slide block members such that said first and second slide block members are slidable relative to said slide bar member,

spring means disposed to urge said first and second slide block members apart,

the loop lengths of said guide means and said handrail having a predetermined relationship wherein said spring means establishes a gap between said first and second slide block members, and maintains a tension in said handrail member, notwithstanding changes in the loop length of said handrail member over a predetermined range,

and drive means coupled to said handrail member which pushes and pulls said handrail member about said guide loop.

4,239,103

OSCILLATING FEEDING APPARATUS

Hugo Feldpausch, Wassersteige 5, 5880 Lüdenscheid, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,560

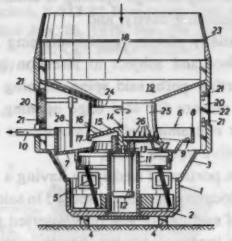
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806331

Int. Cl.³ B65G *47/12*

U.S. Cl. 198—443 **5 Claims**

1. Feeding apparatus having an oscillating cup, a housing enclosing the oscillating cup, a storage hopper on said housing, a rotatably supported conical bottom plate below said storage hopper and above said oscillating cup, a funnel leading from said storage hopper toward said bottom plate and defining therewith an annular outlet opening, means on said bottom

plate defining a spiral path, an annular flexible curtain around said funnel, extending across said annular outlet opening and



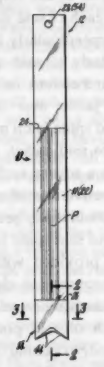
overlapping the edge of said bottom plate, and drive means for rotating said bottom plate.

4,239,104

GLUED FOLDER

Harry I. Roccaforte, Western Springs, and Irvin W. Sherwood, Downers Grove, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 26, 1979, Ser. No. 60,760
Int. Cl.³ B65D *65/16, 85/68*
U.S. Cl. 206—45.33 **21 Claims**



1. A glued folder forming a generally envelope-type structure for packaging and display of an elongated product comprising:

a main display panel with top, bottom and side edges;

a lower panel hingedly connected to the bottom edge of said main display panel and disposed parallel thereto;

a side panel hingedly connected to one edge of said main display panel and disposed parallel thereto, said side panel extending from the top edge of said bottom panel to the top edge of said main display panel;

a back panel hingedly connected to the opposite edge of said main display panel and disposed parallel thereto, said back panel being adhesively connected along the inner surface thereof to the outer surface of said side and lower panels; and

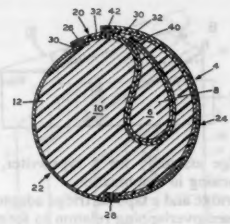
said main display panel having upper and lower slots extending across the entire width and respectively spaced from the top and bottom edges thereof, with the portions of said main display panel extending between each slot and the associated top or bottom edges thereof cooperating with the back, side, and lower panels to form upper and lower closed pocket portions at the opposite ends of said folder, whereby the opposed ends of the elongated product may be received in said closed pocket portions, with the intermediate portion of said product being disposed adjacent the front surface of said main display panel, said folder thereby securely holding the product and allowing for the display of said product.

4,239,105

RESIN CAPSULE FOR MINING ROOF BOLTING SYSTEMS

Peter T. Gilbert, Albany, N.Y., assignor to General Electric Company, Gainesville, Fla.

Filed Aug. 2, 1979, Ser. No. 62,968
Int. Cl.³ B65D *81/32, 25/08*
U.S. Cl. 206—219 **5 Claims**



1. A multi-compartment capsule having a longitudinally extending tubular inner compartment for containing a catalyst and a longitudinally extending tubular outer campartment around said inner compartment for containing a resin composition which, when mixed and reacted with said catalyst sets and becomes a hardened mass, said capsule being formed of a composite strip having a single-ply longitudinally extending center portion with two-ply portions extending longitudinally along and heat sealed to the opposite longitudinal marginal edges of said center portions, one of said two-ply edge portions being folded back upon itself and being heat sealed to form the longitudinally extending inner compartment, the longitudinal outer edge of the other of said two-ply film strips being folded around said longitudinally extending inner compartment and being heat sealed to the outer ply of said one two-ply strip to form said outer compartment around said inner compartment.

4,239,106

INDIVIDUALLY FITTED HELMET AND METHOD OF AND APPARATUS FOR MAKING THE SAME

Jackson A. Aileo, Carbondale, Pa., assignor to Gentex Corporation, Carbondale, Pa.

Division of Ser. No. 950,154, May 12, 1978, abandoned. This application Jan. 11, 1979, Ser. No. 2,756
Int. Cl.³ B65D *69/00;* **A42B** *3/02, 1/22*
U.S. Cl. 206—223 **1 Claim**

1. A kit for use in making a helmet individually fitted to the head of a wearer including an outer shell, a fixture having the shape of said outer shell and having a plurality of apertures in the region thereof corresponding to the region of the outer shell which is to receive a liner, a liner having a plurality of apertures adapted to register with said fixture apertures when

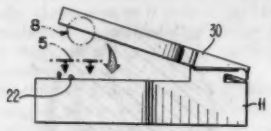
said liner is assembled in said fixture, and a plurality of spacers capable of being slidably received in said aligned apertures.

4,239,107

CARTRIDGE ASSEMBLY APPARATUS FOR TYPEWRITERS

Richard G. Boyatt, Jr., Lexington, and Donald J. Steger, Corinth, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1979, Ser. No. 8,461
Int. Cl.³ B65D *69/00*
U.S. Cl. 206—225 **17 Claims**



1. A cartridge assembly for a typewriter, said cartridge assembly comprising in combination:

a ribbon cartridge and a tape cartridge adapted for mating in superimposed overlapping relation to form said cartridge assembly;

each of said cartridges having top and bottom surfaces, said bottom surfaces being positioned, when forming said cartridge assembly, in bottom to bottom relation;

tab means projecting from the plane of one of said bottom surfaces of one of said cartridges, and means defining a slot in said tab means;

fin means on the other of said cartridges and movable into said slot for engagement with at least a portion of said means defining said slot;

mutually engageable means on said cartridges for limiting relative movement of said cartridges in a first direction and with respect to each other;

a camming surface on one of said cartridges and a cam follower on the other of said cartridges, said camming surface and cam follower engageable to effect relative movement between said cartridges in said first direction until said mutually engageable means inhibit further relative motion;

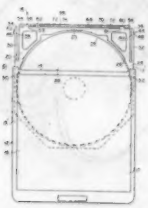
cooperating means on said cartridges to limit relative motion between said cartridges in a second direction perpendicular to said first direction, and latch means to hold said cartridges in superimposed overlapping relation.

4,239,108

VIDEO DISC CADDY

Clyde F. Coleman, Crawfordsville, and Leslie A. Torrington, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,412
Int. Cl.³ G11B *25/04*; B65D *85/30*
U.S. Cl. 206—312 **5 Claims**



1. A protective caddy for a disc record for use with a record player; said player having an input slot through which said caddy is inserted along a path to load an enclosed record therein; said player being provided with a spine locating member, a pair of latch defeat members and a pair of spine gripper members at the end thereof remote from said input slot; said caddy comprising:

(A) a jacket having an edge opening in communication with a record enclosing cavity; and

(B) a substantially planar, record retaining spine having a major surface and subject to insertion into said jacket along a further path; said spine defining a first portion forming a closure for said edge opening, and a further portion for restraining planar movement of an enclosed record relative to said spine;

said closure portion of said spine having a slot for receiving said locating member disposed in said player during arrival of said caddy at a fully inserted position in said player to locate said spine therein in the lateral direction;

said spine being provided with a pair of latch members for releasably securing said spine to said jacket; each of said spine latch members having a free end subject to deflection along a direction substantially parallel to said major surface and perpendicular to said spine insertion path; each of said spine latch members having a protuberant element disposed near the free end thereof; each of said protuberant elements having a slanting surface remote from said free end of the respective one of said spine latch members, each of said slanting surfaces extending substantially perpendicularly to said major surface and non-perpendicularly to said spine insertion path such that engagement between said slanting surface and a portion of said jacket near said edge opening causes deflection of said spine latch member to allow insertion of said spine into said jacket; each of said protuberant elements having a square surface adjacent to said free end of the respective one of said spine latch members, and extending substantially perpendicularly to both said major surface and said spine insertion path;

said jacket being provided with a pair of pockets for receiving said protuberant elements disposed on said spine latch members when said spine is fully seated in said jacket; each of said pockets defining a surface adjacent to said edge opening of said jacket, each of said defined surfaces being disposed substantially perpendicularly to said spine insertion path; said perpendicularly disposed surfaces of said pockets being subject to engagement with said square surfaces of said protuberant elements upon reception of the respective one of said protuberant elements into the respective one of said pockets to preclude removal of said spine from said jacket during said engagement;

said free end of each of said spine latch members being arranged for arrival in the path of the respective one of said latch defeat members mounted in said player during insertion of said caddy into said player for effecting deflection of said spine latch members in a manner retracting said protruding elements from said pockets for freeing said spine from said jacket;

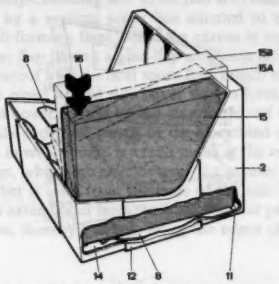
said closure portion of said spine defining a pair of cutouts for receiving said gripper members disposed in said player in response to arrival of said caddy at said fully inserted position in said player to lock said spine to said player such that said spine having been freed from said jacket is removed therefrom, along with said enclosed record, for retention in said player during subsequent jacket withdrawal.

4,239,109

STORAGE BOX FOR SUBSTANTIALLY PARALLELEPIPEDIC TAPE AND FILM CASES

Don B. Nielsen, Vintergatan, S-502 60 Boras, and Knut J. Nielsen, Björkebacken, S-513 02 Borgstena, both of Sweden

Filed Jan. 26, 1979, Ser. No. 6,752
Int. Cl.[3] B65D 85/672
U.S. Cl. 206—387 6 Claims



1. Storage box for substantially parallelepipedic tape and film cases, said storage box comprising a pair of parallel side walls, a front wall and a back wall parallel to each other and perpendicular to said side walls, said front and back walls being spaced apart a distance greater than the front and back walls of said case to be positioned therein, a bottom wall, a top wall spaced from the bottom wall and extending inwardly a short distance from said back wall and perpendicular thereto, said bottom wall and said top wall being arranged to receive the case therebetween, the front wall having a height from the bottom wall which is substantially half the distance from the bottom wall to the top wall, and a spring element located on the bottom wall for pressing the case towards the top wall, said spring element engaging said bottom wall adjacent said back wall and extending along a curved line toward said front wall, said spring element having a free end adjacent said front wall and spaced from said bottom wall, the relationship between the dimensions of the case and the dimensions of the storage box being such that the case can be slid under the top wall to a position between the side walls against the bias of the spring element, said spring element pivoting and biasing the case against both the front and back walls and upwards against the top wall to maintain the case in a safe storage position in the storage box, said case being removable from said storage box by applying downward pressure only on said case at a position adjacent said front wall and toward said bottom wall, whereby said free end of said spring element is moved toward said bottom wall and said case pivots toward said front wall and away from said back wall, whereby said case disengages from said top wall.

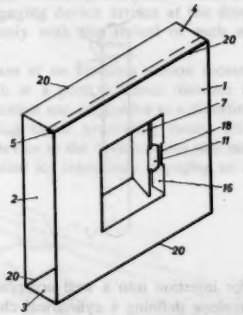
4,239,110

CONTAINER FOR PACKAGING WIRE ROLL

Peter Enke, Monheim-Baumberg; Helmut Schlickmann, Monheim; Wolfgang Kneuper, Duesseldorf; Ekkehard Frohberg, Dormagen; Arno Mink, Wuppertal, and Jürgen Weidenmüller, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 2,115
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801598
Int. Cl.[3] B65D 85/67, 85/671
U.S. Cl. 206—396 6 Claims

1. A container for packaging an unsupported roll of wire formed from a rectangular one-piece blank having two main side panels, a first connecting panel disposed between the two main side panels along the longitudinal direction of the blank and removably connected along two perforated folding lines to the main side panels at their lateral boundaries second connecting panel removably connected to the free lateral edge of one main side panel along a perforated folding line and a connecting strip removably connected along a perforated folding line to the free lateral edge of the other said main side panel, each main side panel having a centrally disposed opening formed by core flaps hingedly connected along one edge to the main side panels with a width equal to that of the connecting panels and having a connecting tongue hingedly connected to the free edge opposite the one edge and a connecting slit for receiving the connecting tongue of the core flap of the other main side



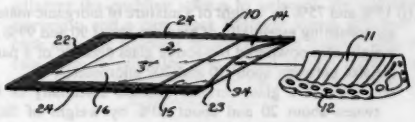
panel, the blank being erectable by infolding each of the main side panels 90° about the folding lines of the first connecting panel disposed therebetween, infolding the core flaps 90° and inserting the connecting tongues into their respective connecting slits after insertion of the unsupported roll of wire between the main side panels to define a spool therefor, infolding the second connecting panel and the connecting strip 90° about their folding lines and adhesively connecting the connecting strip to the free lateral edge of said second connecting panel defining an outer container whereby the wire can be unwound from the spool by the tearing away of the connecting panels and connecting strip along the perforated folding lines.

4,239,111

FLEXIBLE POUCH WITH CROSS-ORIENTED PUNCTURE GUARD

Roger P. Conant, Glencoe, and Raymond G. Duffy, Du Page County, both of Ill., assignors to Laminating & Coating Corporation, Schaumburg, Ill.

Filed May 21, 1979, Ser. No. 40,584
Int. Cl.[3] B65D 25/36, 81/20, 85/00
U.S. Cl. 206—484 13 Claims



1. A puncture-resistant pouch comprising: a flexible bag formed of synthetic resin material and defining an outer surface; and a puncture guard having an area less than that of the guard and being defined by grain-oriented, laminated synthetic resin sheets bonded to each other in cross-oriented relationship, an inner one of said sheets being bonded to said outer surface whereby the puncture guard defines an outermost portion of the pouch.

4,239,112

PLUG FOR ELIMINATING TROUBLESOME ZONES IN WELLS

Viktor F. Rogov, ulitsa Garibaldi, 30, korpus 2, kv. 70, Moscow; Nikolai K. Lipatov, ulitsa Mekhanizatorov, 1, kv. 4, Apatity Murmanskoi oblasti; Gennady V. Patrushev, ulitsa Dmitria Donskogo, 27/3, Novosibirsk; Ruben A. Tatevosian, ulitsa Gorkogo, 4, kv. 60, and Mikhail Y. Titov, ulitsa Kominterna, 34/6, kv. 83, both of Moscow, all of U.S.S.R.

Filed Jun. 11, 1979, Ser. No. 47,249
Claims priority, application U.S.S.R., Jul. 6, 1978, 2631353
Int. Cl.[3] B65D *83/00, 77/10*
U.S. Cl. 206—525 3 Claims

1. A plug for insertion into a well comprising an elastic waterproof envelope defining a cylindrical chamber for accomodating a plugging agent, said envelope having a closed bottom and an open top, a plugging agent comprising a dry quick-setting mixture packed into said chamber to a level below said open top to define a free envelope top portion, said top portion being folded over substantially at said level and covering a part of the outer surface of said envelope below said level and at least one elastic retaining ring circumferentially surrounding said envelope over said top portion, said retaining ring tightly closing said open top of said envelope while allowing passage therethrough of pressurized air from within said chamber.

4,239,113

COMPOSITION FOR THE PREPARATION OF BONE CEMENT

Albert Gross, and Werner Ege, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Kulzer & Co. GmbH, Bad Homburg, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,425
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724814
Int. Cl.[3] B65D *69/00*
U.S. Cl. 206—568 13 Claims

1. An uncured bone cement composition which when cured forms a bone cement comprising between about

(i) 15% and 75% by weight of a mixture of inorganic materials consisting essentially of between about 90 and 99% by weight of a powdered bio-active glass ceramic of a particle size between about 10 and 200 micrometer,

said bio-active glass ceramic consists essentially of between about 20 and about 60% by weight of SiO_2, between about 5 and 40% P_2O_5, between about 2.7 and 20% Na_2O, between about 0.4 and 20% K_2O, between about 2.9 and 30% MgO, and between about 5 and 40% CaO,

and between about 5 and 10% by weight of vitreous mineral fibers between about 2 and 5 mm long, admixed with

(ii) a mixture of copolymers of methylmethacrylate and methyl acrylate.

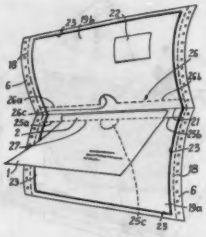
8. The composition of claim 1 which also contains a X-ray contrast means.

4,239,114

CONTINUOUS ASSEMBLIES OF POSTAL CORRESPONDENCE UNITS

Andre M. J. Denay, Chevilly Larue, France, assignor to Societe Herve & Fils S.A., Paris, France

Filed Sep. 3, 1976, Ser. No. 720,398
Claims priority, application France, Sep. 9, 1975, 75 27578
Int. Cl.[3] B65D *27/10, 27/34*
U.S. Cl. 206—610 5 Claims



1. Continuous assembly of mailers with incorporated documents, said assembly comprising a continuous base strip divided into panels, each panel being bounded by two transverse lines of weakness providing for the accordion-folding of said continuous strip, longitudinally extending drive means along both of the side edges of said base strip enabling said strip to be driven in a printing machine, at least some of the panels having incorporated document means comprising leaf means each having a top flange and a detachable portion defined by a tear line of perforations, each leaf flange being fastened by glueing at the top of the panel and transversely of the base strip so as to be perpendicular to the direction of movement of the base strip through a printing machine, said assembly being arranged to form a plurality of sealed folders by glueing, wherein the folders are sealed after their passage through the printing machine, a tear line of perforations on said base strip extending transversely between said longitudinally extending drive means and arranged to coincide with the tear line defining said detachable portion, and wherein each panel of the base strip is divided into two flaps foldable upon one another on a fold line constituting the longitudinal median of the panel concerned, and adhesive areas extending parallel to each of the four sides of each panel and at a short distance from said sides on the front of the strip and the incorporated documents means on each panel is attached to one of the flaps while the other flap is provided with a window arranged to overlie the zone of the first element of the incorporated document means which receives the address of the addressee by direct impression of the printing machine.

4,239,115

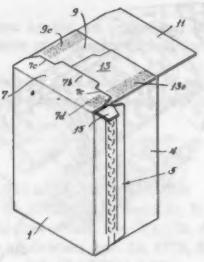
FOLDING ICE-CREAM CARTON AND CARTON BLANK THEREFOR

Thomas W. Froom, Pittsford, N.Y., assignor to Rendoll Paper Corporation, Rochester, N.Y.

Filed Oct. 17, 1977, Ser. No. 842,747
Int. Cl.[2] B65D *5/70*
U.S. Cl. 206—611 27 Claims

1. An integral blank for forming a top-opening carton having an elongate front panel, an elongate bottom panel, an elongate rear panel, an elongate cover panel, and an elongate front cover sealing flap; said panels being articulated to one another in the order named, and said front cover sealing flap being articulated to said cover panel, by horizontal parallel score lines, and said front cover sealing flap being adapted to overlie said front panel and to be sealed thereto to form said panels into a tube having a rectangular transverse cross section in opened-up position and into a collapsed parallelogram in the folded-together position; said front and rear panels having

laterally-projecting, inner end wall-forming flaps articulated thereto by vertical score lines, each of the inner end wall-forming flaps, in the erected carton, being adapted to overlap the other inner end wall-forming flap and overlie it on only one side thereof; said bottom panel having a laterally-projecting, outer end wall-forming flap articulated to a side thereof by a vertical score line and adapted to be bent up to a position to overlie said inner end wall-forming flaps; said cover panel having a laterally-extending side cover flap articulated to a side edge thereof by a vertical score line adapted to overlie the inner end wall-forming flaps when the carton is erected; and the front cover flap having a glue-flap extension articulated to a side edge thereof by a vertical score line, which extension is adapted to be glued to said side cover flap to form, with said cover panel, a cover hinged to said rear panel and adapted to overlie the side and front panels of the assembled carton; the improvement in which there is a tuck-in tab at the edge of said side cover flap, which tab extends over the greater portion of the edge of, but is inset from the ends of the side cover flap from which it extends and from the front and rear panels of the erected carton, thereby leaving, along the edges of each said



inner end wall, a narrow strip for the application of strips of glue for fastening the outer end wall-forming flap thereto while leaving sufficient space between the glue strips for the insertion of the tuck-in tab between the inner and outer end walls, in which said other inner end wall-forming flap has a free edge extending in a straight line all the way across its face parallel to the score line which joins it to the panel from which it projects whereby, in the erected carton tube, the overlying inner end wall-forming flap lies flat against the face of said other inner end wall-forming flap all the way from said top panel to said bottom panel and in which said glue-flap extension is attached to the end of said front cover flap adjacent said side-cover flap by a vertical score line offset sufficiently to permit the glue-flap extension to overlie the side-cover flap in the erected carton and to be glued thereto by an extension of the glue strip which fastens the outer end wall-forming flap to the overlapping inner end wall-forming flap adjacent to and parallel to the side edge of the front panel whereby, in the assembled carton, the side cover flap, when the tuck-in tab thereof is inserted beneath the outer end wall-forming flap, lies flat against the overlying inner end wall-forming flap in surface to surface contact therewith throughout the length thereof.

4,239,116

APPARATUS FOR DIVERTING ARTICLES

Bernard C. Eisenberg, Rockaway, and John C. Walz, Bloomfield, both of N.J., assignors to Solbern Corp., Fairfield, N.J.

Filed Oct. 27, 1978, Ser. No. 955,202

Int. Cl.³ B07C 9/00

U.S. Cl. 209—523 **10 Claims**

1. An apparatus for diverting articles from a conveyor moving said articles in a line along a predetermined path, the apparatus comprising:

a diverting station located adjacent the predetermined path;

at least one additional conveyor for moving articles along at least one additional path diverted from said predetermined path and extending from said diverting station;

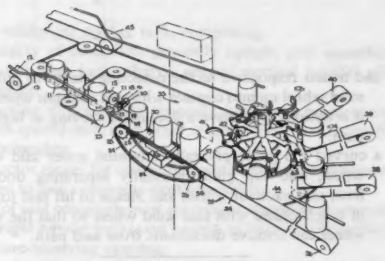
means for generating a different diverting signal corresponding to each additional conveyor;

a plurality of devices, each of which is adapted to engage a different article as it passes the diverting station for diverting the engaged article from the first conveyor;

means for supporting the engaging devices in spaced relation to each other for movement along a closed path, the diverting station and the at least one additional conveyor being located along said closed path;

means for driving the supporting means in synchronism with the conveyor extending in a predetermined path in order that an engaging device arrives at the diverting station simultaneously with the arrival of each article on the conveyor;

enabling means at an enabling station located along said closed path at a predetermined distance ahead of the diverting station and responsive to a diverting signal from the diverting signal generating means for enabling an engaging device as the device passes said enabling station to be actuated for selectively engaging an article on the



conveyor when the engaging device and the article meet at the diverting station to selectively divert the engaged article to one additional conveyor corresponding to said diverting signal;

means for actuating each enabled engaging device to divert the article corresponding thereto at the diverting station; and

means for releasing said article from said engaging device at the additional conveyor corresponding to the diverting signal, wherein

each engaging device comprises an arm pivotally mounted on said support means for movement between a first position in which the arm is free of engagement with the article at the diverting station and a second position in which the arm can engage the article to divert it from the conveyor, and wherein

said enabling means comprises means for biasing each arm toward the first position; a cam track extending from adjacent the enabling station to adjacent the additional conveyor; and a cam track follower means attached to each arm, the follower means when in contact with the cam track pivoting the arm to said second position between the diverting station and the additional conveyor.

4,239,117

HIGH SPEED DOCUMENT SORTING MEANS

Clement R. Konars, Glen Cove; Emanuel Quinci, Dix Hills, and Mario Vascotto, Bayville, all of N.Y., assignors to Halm Instrument Co., Inc., Glen Head, N.Y.

Filed Feb. 1, 1977, Ser. No. 764,764

Int. Cl.³ B07C 5/00

U.S. Cl. 209—553 **2 Claims**

1. Document processing means comprising,

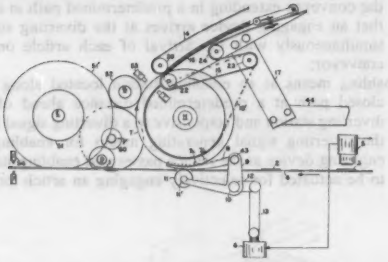
means for guiding a plurality of documents along a path at high speed,

means mounted along said path to detect identifiable documents,

a magazine mounted to receive the detected documents,

and vacuum means mounted to remove the detected documents from said path to said magazine,

the vacuum means comprising a vacuum wheel mounted a predetermined spacing over said path, said vacuum wheel having a surface speed equal to the high speed document speed, a solid wheel movably mounted below said vacuum wheel and below said path,



and means responsive to the detecting means to move said solid wheel up into contact with said vacuum wheel when it is desired to remove a document moving at high speed path,

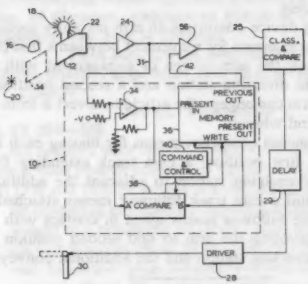
a curved top guide pivotally mounted under said vacuum wheel, said top guide normally separating documents from said vacuum wheel, and means to lift said top guide in synchronism with said solid wheel so that the vacuum wheel can remove documents from said path.

4,239,118

SORTING APPARATUS HAVING AUTOMATIC NULLING ARRANGEMENT

James F. Lockett, Houston, Tex., assignor to Geosource Inc., Houston, Tex.

Filed Feb. 3, 1978, Ser. No. 874,780
Int. Cl.³ B07C 5/342
U.S. Cl. 209—581 **13 Claims**



1. In an apparatus for sorting articles having reflectance characteristics within a predetermined range of reflectances, the sort being based upon the intensity of light reflected from each article as detected against a background having a reflectance below the predetermined range of reflectances, the apparatus including a viewer for viewing an area through which the articles being sorted pass and for generating an electrical signal functionally related to the intensity of light reflected from each article and an amplifier operatively coupled to the viewer for amplifying the electrical signal, the amplifier being susceptible to d.c. offset and temperature drift, the improvement comprising:

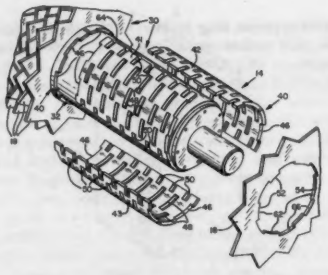
a nulling arrangement associated with the amplifier and operable while articles are passing in spaced relation to one another through the area viewed by the viewer for correcting the effects of amplifier d.c. offset and temperature drift by generating and applying an electrical correction signal functionally related to the difference between a predetermined reference signal representative of light reflected from the background and the lowest electrical classification signal output from the viewer during a predetermined sample time period, said sample time period being longer than the time required for an article to pass through the viewed area.

4,239,119

DISC SEPARATOR

Franz Kroell, 13405 NW. Greenwood Dr., Portland, Oreg. 97229

Filed Apr. 23, 1979, Ser. No. 32,274
Int. Cl.² B07C 9/00
U.S. Cl. 209—672 **7 Claims**



1. In a disc separator having at least one cylindrical shaft and a plurality of annular separator discs received on said shaft,

retainer means for retaining said discs, said retainer means comprising an annular sleeve member mounted exteriorly on said shaft, said annular sleeve member comprising a plurality of arcuate segments, said arcuate segments having spaced rings of arcuate circumferentially-extending slots extending therethrough,

said discs having internal splines extending into the slots.

4,239,120

DEVICE FOR THE BUNKERING AND ASSORTED FEEDING OF SMALL PARTS

Klaus Steckhan, and Norbert Grief, both of Aachen, Fed. Rep. of Germany, assignors to Rhein-Nadel Automation Gesellschaft mit beschränkter Haftung, Aachen, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,663
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837419
Int. Cl.³ B07C 5/12
U.S. Cl. 209—682 **6 Claims**

1. In a device for the bunkering and sorted feeding of small parts, particularly to processing machines, by which the small parts are removed from a bunker space in the bottom area of the bunker, which bunker space is refillable from the top, and via an intermediate inserted lifting means are fed into an inlet prechamber of a sorting stretch section, the latter being formed for example in the shape of a vibrating conveyor, the improvement comprising

a container having an upper longitudinal edge and defining a bunker, the bunker having a bunker space,

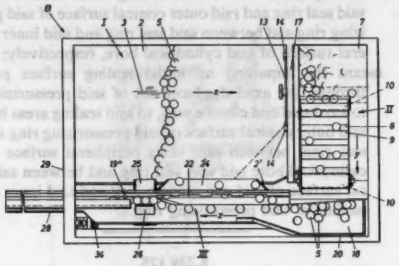
the lifting means and the sorting stretch section are accommodated in said container,

means for partitioning said chamber into a subspace partitioned from the bunker space and defining a bunker outlet

opening communicating therebetween, a bunker outlet direction thereby being defined,

said lifting means for conveying the small parts rising upwardly in a direction transversely to the bunker outlet opening,

said lifting means being arranged in said subspace of said container,



said lifting means having an upper end thereof ending in front of the inlet prechamber of said sorting stretch section,

said sorting stretch section extending on an upper longitudinal edge of said container opposite to the bunker outlet direction.

4,239,121

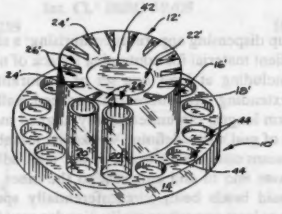
VITAMIN ORGANIZER

Martin Hodes, 53-54 207th Street, Bayside, N.Y. 11364

Continuation-in-part of Ser. No. 931,170, Aug. 4, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,561

Int. Cl.³ B07C 7/00

U.S. Cl. 209—703 **1 Claim**



1. A vitamin organizer for quantizing, in individual containers, complete nutritional dosage requirements in the form of one or more commercially prepared tablets, capsules or other dosage forms, comprising:

a base;

a guide means for guiding the individual dosage forms into containers disposed below said guide means; and

a support structure for supporting said guide means on said base and in predetermined spaced apart relation to said base, to permit the containers to be inserted in said organizer below said guide means;

said guide means comprising a generally circular concave disk, a dosage reservoir defined in the central portion of said concave disk, and a plurality of guide slots formed radially outwardly from said reservoir to the edge of said guide means to guide dosages moved from said reservoir through said guide slots into a container supported below the edge of said guide means;

said base comprising a generally circular disk having sockets formed therein to receive and hold the containers into which dosages are to be delivered, and sockets being disposed circumferentially around said base and generally below the end of said guide slots.

4,239,122

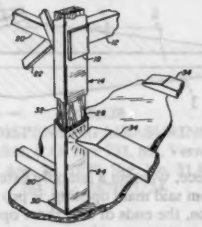
REINFORCED STORAGE RACK

Herbert H. Klein, Arlington Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Mar. 2, 1978, Ser. No. 882,733

Int. Cl.³ A47F 5/00

U.S. Cl. 211—182 **18 Claims**



1. A reinforced storage rack, comprising:

a plurality of composite generally upright post assemblies spaced from each other in general vertical parallel relationship;

a plurality of composite generally horizontal beam assemblies spaced from each other in general horizontal parallel relationship;

connector means for connecting said composite beam assemblies to said composite post assemblies;

each of said composite post assemblies including a generally upright tubular metal post having an interior wall defining a core-receiving opening;

each of said composite beam assemblies including an elongated generally horizontal tubular metal support beam having an interior wall defining a core-receiving opening; and

at least one of said core-receiving openings having an impact and deflection resistant, substantially solid interior wooden core fixedly disposed therein which substantially spans across said core-receiving opening;

said impact and deflection resistant interior wooden core enhancing the strength and load-carrying capacity of said reinforced storage rack in an amount substantially greater than the strength of the metal support beams and posts alone and providing a reinforced storage rack for substantially resisting forklift impact, bending and excessive deflection under load.

4,239,123

RELEASABLY FIXED MOUTHPIECE AS DEVICE FOR DRINKING FROM A CONTAINER

Ludwig Lang, and Ortulf G. Lang, both of Zimmerstrasse 10-12, 61 Darmstadt, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 30,456

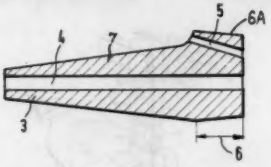
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817199

Int. Cl.³ A47G 21/18

U.S. Cl. 220—90.6 **1 Claim**

1. In a mouthpiece which can be releasably fixed to a container which is filled with a drinkable liquid, said container having a tear-open closure slot to thereby prevent contact by the user's mouth with said container, the improvement comprising wherein said mouthpiece has a mounting portion thereon at one end conforming to the shape of said slot in said container and a mouthpiece end at the other end, said mounting portion having an inclined external wall surface converging toward the central axis of said mouthpiece and in a direc-

tion toward said one end of said mouthpiece, the peripheral dimension of said mounting portion at the end of said inclined wall surface being less than the peripheral dimension of said slot in said container, said peripheral dimension of said mounting portion at the end adjacent said mouthpiece end being greater than said peripheral dimension of said slot in said container, said mounting portion being received in said slot and in sealing engagement with the inwardly facing peripheral wall surface of said slot, wherein said mouthpiece has a main opening extending the entire length and through the central portion



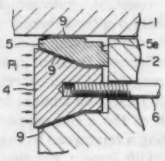
of said mouthpiece, wherein a laterally extending, short opening, separate from said main opening, is provided through said mounting portion, the ends of said short opening exiting from said mounting portion at said one end and at the juncture between said mouthpiece end and said mounting portion, wherein said slot is generally triangular in shape having a base and an apex, wherein said mounting portion is triangularly shaped also having a base and an apex alignable with said base and said apex in said slot, said short opening extending through said mounting portion adjacent said apex on said mounting portion.

4,239,124

FLUID-TIGHT CLOSURE APPARATUS

Hiroshi Inouye, Minorimachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 20, 1978, Ser. No. 952,990
Claims priority, application Japan, Oct. 28, 1977, 52/128686
Int. Cl.³ B65D *53/04, 39/08*
U.S. Cl. 220—240 **16 Claims**



1. A flight-tight closure apparatus for providing a fluid-tight seal between an inner peripheral surface of a cylindrical bore in an enclosure receiving therein a high-pressure fluid and an outer peripheral surface of an end closure wall held in said cylindrical bore, comprising:

said end closure wall including a pressure-receiving surface receiving the internal fluid pressure of the high-pressure fluid within said enclosure and a conical surface of the outer peripheral surface of said end closure wall adjacent to said pressure-receiving surface thereof, said conical surface converging toward said pressure-receiving surface;

a pressurizing ring fitted around the outer peripheral surface of said end closure wall adjacent to said pressure-receiving surface thereof for a small axial displacement, said pressurizing ring including a pressure-receiving surface in direct contact with the high-pressure fluid within said enclosure so as to be subjected to the internal fluid pressure and having an area large enough to derive a required sealing pressure from the internal fluid pressure, and outer and inner conical surfaces for producing, when said pressurizing ring is moved axially by said internal fluid pressure, a radial force acting as the sealing pressure, said inner conical surface of said pressurizing ring cooperating with said conical surface on said end closure wall to define a sealing area therebetween;

a seal ring disposed between said outer conical surface of said pressurizing ring and said inner peripheral surface of said cylindrical bore with sealing areas defined between said seal ring and said outer conical surface of said pressurizing ring and between said seal ring and said inner peripheral surface of said cylindrical bore, respectively; and

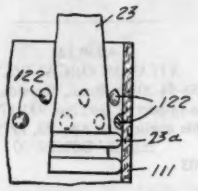
means for imparting an initial sealing surface pressure, through the axial displacement of said pressurizing ring toward said end closure wall, to said sealing areas between said outer conical surface of said pressurizing ring and said seal ring, between said inner peripheral surface of said cylindrical bore and said seal ring and between said conical surface of said end closure wall and said inner conical surface of said pressurizing ring.

4,239,125

CUP DISPENSING APPARATUS

Thomas D. Pawlowski, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 12, 1979, Ser. No. 3,087
Int. Cl.³ A47F *1/06*
U.S. Cl. 221—65 **31 Claims**



25. Cup dispensing apparatus comprising: a sleeve of flexible and resilient material for containing a stack of nested cups, said sleeve including at least one set of a plurality of generally axially extending circumferentially spaced wall defining strips of uniform length; circumferentially aligned means intermediate ends of said strips defining weakened foldable regions; and detent means comprising beads of hot melt adhesive disposed toward one end of and adherent to the inner surface of said sleeve, said beads being circumferentially spaced about the sleeve in at least one substantially circular row for engagement by the rim of a cup to retain said stack of nested cups in said sleeve, said sleeve being collapsible by folding of said strips about said weakened foldable regions and about ends thereof upon forcibly urging ends of said sleeve relatively toward one another as cups are removed past said detent means, from said stack, thereby to maintain engagement of said detent means with a cup rim.

4,239,126

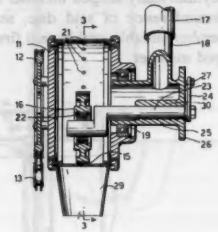
SEED SOWER HAVING APERTURED PICK-UP MEMBER

George M. Dobson, 293 Clanfield Rd.; Donald T. Zerner, 108 Hyde St., both of North Rockhampton, Queensland, Australia (4701), and Austin J. Dobson, 4 West St., Rockhampton, Queensland, Australia (4700)

Filed Jun. 1, 1979, Ser. No. 44,581
Claims priority, application Australia, Nov. 30, 1977, PD2610; Jan. 16, 1979, PD7373
Int. Cl.³ A01C *7/04*
U.S. Cl. 221—211 **8 Claims**

1. A seed sower including an apertured driven pick-up mem-

ber in the form of a rotatable drum having spaced apertures in communication with a suction means and which apertures move through seed storage means in such manner that single seeds are picked up at the apertures by suction and held over each aperture and carried to a discharge locality and released for planting, characterized in that the pick-up member is hollow and is provided with an internal sealing member having an exterior surface which contacts the interior of each filled aper-



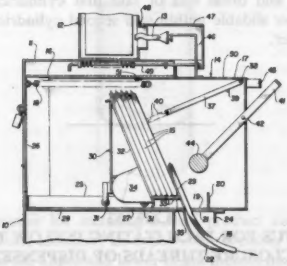
ture adjacent the discharge locality thereby sealing off the suction and allowing each seed to travel to the discharge locality, said internal sealing member comprising a rotatable roller having a rotational axis which is spaced from the rotational axis of said drum, said roller being provided with a plurality of outwardly extending tines on the exterior surface thereof, each of said tines being arranged to project through an adjacent aperture of the rotatable drum and thereby push the held seed away from its respective aperture to the discharge locality.

4,239,127

GRAVITY ASSISTED NEWSPAPER VENDING MACHINE WITH CUSTOMER-OPERATED NEWSPAPER LIFT DEVICE

Walter K. Owens, P.O. Box 1032, Crestview, Fla. 32536

Filed Feb. 26, 1979, Ser. No. 14,920
Int. Cl.³ B65G *59/08*
U.S. Cl. 221—259 **10 Claims**



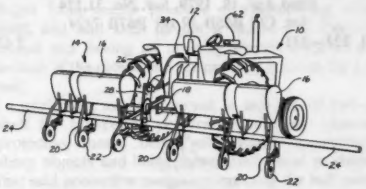
1. A newspaper vending machine comprising a stable support, a coin mechanism on said support including a control element released for movement when proper coins are placed in the mechanism, a storage compartment for newspapers on the support including a fixed box-like housing section having an open end and a movable box-like housing section telescoped within the fixed housing section and having a connection with said control element, spring means biasing the movable housing section to a retracted position in the fixed housing section, the fixed and movable housing sections having newspaper outlet openings in their bottoms adapted to register when the movable housing section is extended from the fixed housing section to a newspaper dispensing position, supporting means for an inclined stack of newspapers in the fixed housing section including a forward abutment plate to lap the lower edge portion of a forwardmost newspaper in the stack, a rear rest plate for the stack, and power means to advance the rest plate toward the abutment plate automatically as each forwardmost newspaper is dispensed through said outlet openings, and manual means on the movable housing section to lift each forwardmost newspaper in the stack and release its lower edge portion from behind the abutment plate and to shift the movable housing section to an extended newspaper dispensing position with said outlet openings in registry.

4,239,128

PRODUCT DISPENSING MEASURING DEVICE

Russell D. Longnecker, P.O. Box 731, Mt. Vernon, Wash. 98273

Filed Apr. 20, 1979, Ser. No. 31,842
Int. Cl.³ B67D *5/24*
U.S. Cl. 222—1 **18 Claims**



10. An apparatus especially adapted to measure the rate of rotation of an apparatus such as an auger to dispense agricultural products, said apparatus comprising,

a. a housing structure,

b. a shaft rotatably mounted to said housing structure so as to be permitted to rotate about a non-linear longitudinal axis relative to said housing structure,

c. a pick up means fixedly mounted to said shaft and having plurality of equally spaced radially outwardly projecting teeth on a circumference thereof, said tooth means following a rotational path as said shaft rotates,

d. mounting means rotatably attached to said shaft and directly mounted thereto independent of said housing structure at a location adjacent to said pick-up means so as to maintain a substantially constant position relative to said shaft and said pick-up means as said shaft rotates and,

e. pick-up counting means affixed to said mounting means positioned adjacent said rotational path to measure rate of revolution of said pick-up wheel means as said pick-up wheel means rotates with said shaft.

4,239,129

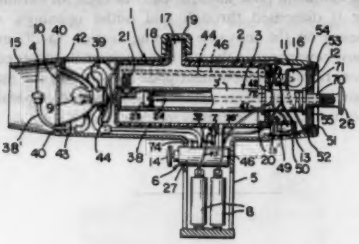
WATER PISTOL AND/OR FLASHLIGHT STRUCTURE

Gary F. Esposito, 5862 Lexington Ave., Portage, Ind. 46368

Filed Nov. 29, 1978, Ser. No. 964,680
Int. Cl.³ F41B *9/00*
U.S. Cl. 222—79 **35 Claims**

1. A toy comprising an elongated housing having a chamber therein for a liquid, a pump including a piston having an exposed rod end extending rearwardly of said toy facilitating

manual operation for building up an appreciable amount of pressure in said chamber for ejecting a stream of liquid there-



from an appreciable distance substantially forwardly of said toy, and means for controlling the ejection.

4,239,130

OIL CADDY

Lawrence J. Altadonna, 2859 Gatling Dr., St. Louis, Mo. 63129

Filed Apr. 18, 1979, Ser. No. 31,174

Int. Cl.[3] B65B *39/00*; B67B *7/24*

U.S. Cl. 222—131 **2 Claims**

1. Apparatus for storing a cylindrical can container of oil or the like on a motor vehicle, comprising

a canister having an open upper end and being of such internal width as to accept and support a can container inserted through the open upper end, and being of such height that a portion of such can container so supported will extend above the canister upper end,

mounting bracket means, formed in a vertical plane, to mount the canister to a motor vehicle, and

a funnel-like member having a larger receiving end including means for mounting to the open upper end of the canister, a smaller opposite discharging end terminating in a spout, and an intermediate tapered wall portion,

said intermediate tapered wall portion having, radially inward of the means for mounting to the canister and spaced toward the opposite discharging end of the funnel, means to graspingly engage the end of such can container, together with

removable stopper means to close the spout.

4,239,131

SELF-PRIMING LIQUID DISPENSER

Ken Emert, 17215 SW. 85th Ave., Miami, Fla. 33157, and Dan Rogers, 2910 SW. 120th Rd., Miami, Fla. 33155

Filed Nov. 28, 1977, Ser. No. 855,198

Int. Cl.[3] G01F *11/02*

U.S. Cl. 222—135 **4 Claims**

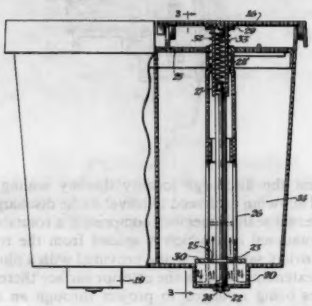
1. A liquid dispenser, comprising:

a container having a first opening in it through which liquid may be added to said container, a second opening in it through which liquid may be dispensed from said container, and a third opening in the top of said container,

a rod shaped member disposed within said container having a distal end capable of blocking said second opening,

a circularly disc shaped member connected to and extending perpendicularly from said rod near said distal end,

a first hollow cylindrically shaped member which extends the length of said container, the internal circumference of said first cylindrically shaped member being nearly equal to the circumference of said disc, said circularly disc shaped member slidable within said first hollow cylindrically shaped member,



a hollow cylindrically shaped extension connected to said first cylindrically shaped member, said extension movably protruding out said third opening of said container, the proximal end of said rod shaped member slidable within said hollow extension,

a flat circularly shaped plate extending perpendicularly and outwardly from the distal end of said first cylindrically shaped member,

a second cylindrically shaped member surrounding said second opening, said second member having an internal circumference equal to the external circumference of said plate, said distal end of said first cylindrically shaped member slidable within said second cylindrically shaped member.

4,239,132

APPARATUS FOR FACILITATING INFLOW THROUGH CLOSURE THREADS OF DISPENSER

John J. Mueller, Woodbury, Minn., and Glenn L. Beall, Gurnee, Ill., assignors to Containaire, Inc., Cleveland, Ohio

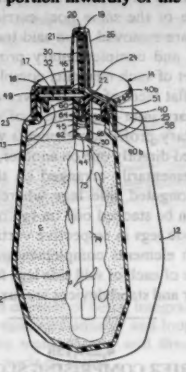
Filed Oct. 31, 1978, Ser. No. 956,236

Int. Cl.[3] B65D *37/00*

U.S. Cl. 222—212 **17 Claims**

14. A member for forming a one-way inlet conduit for a dispenser, comprising a unitary annular support portion constructed to form a seal ring between a closure and a container about an opening of the container, said annular support portion being relatively narrow in the radial direction to provide a large central passageway through the member, and including a circular locating flange inset peripherally, a conduit portion defining an internal passageway within the member and extending from said annular portion inward beyond the annular portion, with an opening at the outer periphery of the annular support portion and at an inner end of the conduit portion

located centrally of the annular support portion, and a one-way valve in the conduit portion inwardly of the annular support



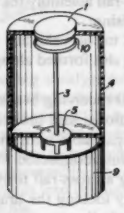
portion limiting flow through the passageway to a direction inwardly from the opening of the support portion.

4,239,133

METERED DISPENSERS

Joseph R. Turnage, P.O. Box 1091, Morehead City, N.C. 28557

Filed May 22, 1978, Ser. No. 908,368
Int. Cl.[3] B65D *47/06*
U.S. Cl. 222—476 1 Claim



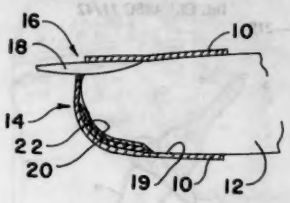
1. A dispenser for metering a fluid product comprising a product portion chamber, an upper valve member including a valve seat at the upper and lower edges thereof disposed in an opening at one end of the portion chamber, said upper valve member having a discharge passageway extending therethrough between the upper and lower valve edge seats and terminating above the upper valve edge seat, a lower valve member disposed in a second opening at the opposite end of the portion chamber, a plurality of posts extending from the lower valve member for centering the same in the second opening, a valve rod connecting the upper and lower valve members such that when said upper valve member discharge passageway is sealed the second opening and lower valve member are in an open position to facilitate filling the portion chamber and when the second opening is closed by the lower valve member the upper valve member discharge passageway is open permitting the portion chamber product to be dispensed.

4,239,134

FLEXIBLE THIMBLE

Carole Joy, 144 Arcadia Ave., Santa Clara, Calif. 95051

Continuation of Ser. No. 570,261, Apr. 21, 1975, abandoned.
This application Jun. 11, 1976, Ser. No. 695,209
Int. Cl.[2] D05B *91/04*
U.S. Cl. 223—101 1 Claim



1. A thimble for use in sewing with a needle comprising:

(a) a tapered tubular shell formed from a flexible material, said shell conforming to the shape of a finger inside said shell and sensation to touch being maintained with the finger from needle pressure communicating with said shell, and said shell having a closed end thereof, said closed end having an opening therein over an annular section of the closed end for providing access for a fingernail;

(b) a protective means disposed in said closed end of said shell for preventing penetration of sharp objects, said protective means being substantially impenetrable to sharp objects and being substantially oval in shape such that said protective means covers only the ball portion of the finger tip inside said shell; and,

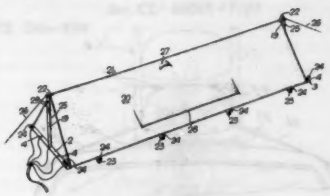
(c) means for securing said protective means against an inside surface of said shell wherein said means for securing said protective means comprises a flexible fabric material.

4,239,135

MULTIPURPOSE RUCKSACK

Francis T. Armstrong, 67 Station Rd., Banchory, Kincardineshire, Scotland

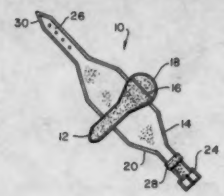
Filed Aug. 13, 1979, Ser. No. 66,293
Int. Cl.[3] A47G *9/00*
U.S. Cl. 224—154 1 Claim



1. A multipurpose rucksack comprising an outer surface which has an inner lining which can be erected into the form of a tent having a ridge with the outer surface as the undersurface of the tent, the outer surface having a pocket to fit over a conventional frame which can be strapped to a wearer and also having means for receiving spacer bars for supporting the erected tent, reinforced margins at the ends of the outer surface, a plurality of cords attached at spaced apart locations along each margin and joined to a length of stout rope, and two spacer bars each provided with spaced apart slots, the spacer bars being alternatively useable with guy ropes to support the ends of the ridge when the tent is pitched on the ground and with the cords inserted in the slots to maintain the margins in a substantially straight condition when the tent is hung by means of the stout ropes in the manner of a hammock clear of

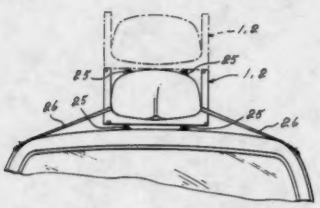
the ground between two spaced apart supports and the ends of the ridge are supported simply by guy ropes.

4,239,136
KEY BAND
Edward J. Godwin, 9609 Grandville, Detroit, Mich. 48228
Filed May 7, 1979, Ser. No. 36,784
Int. Cl.³ A45C 11/42
U.S. Cl. 224—219 **5 Claims**



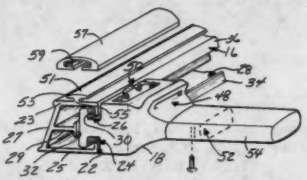
1. A key band comprising a flexible key holder compartment for completely containing a key positioned therein including top and bottom portions separated by sides and ends, said top portion having a slot positioned at one end thereof through which a key may be inserted in and removed from the compartment, which key holder compartment has a length from the slot to the other end thereof slightly larger than the length of a key to be contained therein and said top portion of said key holder compartment having a portion converted upwardly on the side of the slot away from the one end thereof and a portion concaved downwardly on the side of the slot adjacent the one end thereof, the total displacement of the convexed and concaved portions of the top portion at the slot being such that the slot is normally closed to prevent a key from sliding therefrom longitudinally, and an elongated wrist band to which the key holder compartment is secured for securing the key holder compartment to a person's wrist.

4,239,137
BOAT CARRIER AND STAND DEVICE
Pierre Arcouette, 39 Montagne St., Apt. 21, Granby, Canada
Filed Apr. 27, 1979, Ser. No. 33,565
Int. Cl.³ B60R 9/00
U.S. Cl. 224—319 **5 Claims**



1. A boat carrier and stand device comprising a pair of transverse frames and a pair of longitudinal connector rods removably joining said transverse frames one to the other, each transverse frame of generally U-shape and rectangular outline and each having opposite faces extending generally flat and parallel to each other, each transverse frame defining an intermediate portion and a pair of elongated side legs projecting upwardly from the ends of said intermediate portion for straddling a boat resting on said intermediate portion, said intermediate portion having a flat bottom wall and each side leg having an external side face which is flat and straight and which is perpendicular to said bottom face of said intermediate portion, and each of said transverse frames including socket elements and complementary projection elements cooperatively interengaging similar socket elements and projection elements of other adjoining boat carrier and stand devices and of another transverse frame of the same boat carrier and stand device when said rods are removed from said transverse frames, said socket elements and complementary projection elements including a first set of such elements complementarily arranged on the opposite flat faces of said transverse frames for producing complementary inter-engagement of said socket elements and complementary projection elements when said transverse frames are stacked directly one on another, a second set of such elements complementarily arranged on the opposite ends of said opposite elongated side legs whereby said carrier and stand devices can be stacked one on top of the other with the corresponding side legs in respective vertical alignment and a third set of such elements complementarily arranged on the external side face of each of said side legs for inter-engagement when said carrier and stand devices are juxtaposed side by side.

4,239,138
ARTICLE CARRIER COMPRISING SLOTTED SIDE RAIL WITH SLIDABLE CROSS-RAIL AND BRACKET THEREFOR
Daniel J. Kowalski, Ortonville, Mich., assignor to Four Star Corporation, Troy, Mich.
Filed Jun. 11, 1979, Ser. No. 46,995
Int. Cl.³ B60R 7/00
U.S. Cl. 224—321 **2 Claims**



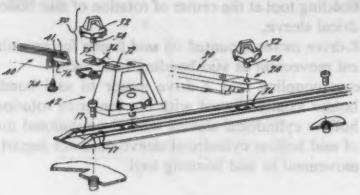
1. A movable cross-rail assembly for an automotive-mounted article carrier comprising:
a side rail attached to the vehicle;
a bracket-receiving slot formed along an inner surface of the side rail;
a movable cross-rail receiving bracket engaging the slot for movement therealong, said bracket including
a base section engageable with the slot,
an inner section interconnected to the base section;
means for receiving a cross-rail formed on the bracket; and
means for releasably locking the bracket along the slot, said locking means including
a disc rotatably mounted to the bracket, said disc having a plurality of radial slits projecting inward a distance from a periphery thereof,
a spring detent being normally biased into at least one of said slits to provide a ratchet to releasably retain said disc against rotation.

4,239,139
SLIDING TIE DOWN VEHICLE LUGGAGE CARRIER
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Filed Feb. 5, 1979, Ser. No. 9,608
Int. Cl.³ B60R 9/04
U.S. Cl. 224—324 **27 Claims**

1. An integral tie down element for use in a luggage carrier system, comprising
an annular portion,
a loop portion, including two columns integrally connected

to said annular portion at radially outward positions from the center of said annular portion, and

threaded means for clamping said tie down to said luggage carrier system, separate from said annular portion and said



loop portion and capable of being integrally connected to said annular portion, said annular and loop portions being made of a plastic material, and said threaded means for clamping being made of metal.

4,239,140

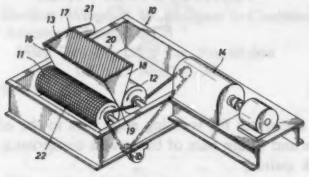
METHOD FOR PRODUCING CATALYST PELLETS OF UNIFORM SIZE

Charles G. Collins, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 776,340, Mar. 10, 1977, Pat. No. 4,139,134, which is a continuation-in-part of Ser. No. 621,710, Oct. 14, 1975, abandoned. This application Nov. 24, 1978, Ser. No. 963,486

Int. Cl.³ B26F *3/00*

U.S. Cl. 225—4 **3 Claims**



1. A method for preparing catalyst pellets of uniform size from non-flexible long extruded catalyst strands, said strands having a diameter greater than 0.03125 inch, which comprises feeding said catalyst strands at right angles to the nip of rotating rolls wherein one roll has a compressible surface and the other roll has a non-compressible convoluted surface and breaking said catalyst strands into discreet pellets as they pass through the nip of said rolls.

4,239,141

WEB SPREADER

Kenneth G. Frye, Lee, Mass., assignor to Lenox Machine Company, Inc., Lenox, Mass.

Continuation of Ser. No. 810,576, Jun. 27, 1977, abandoned. This application Nov. 22, 1978, Ser. No. 963,014

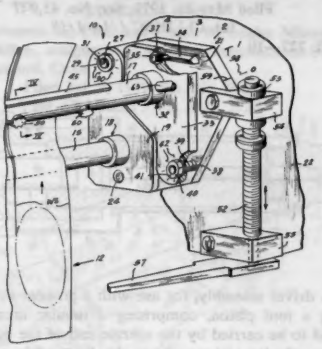
Int. Cl.³ B65H *17/32*

U.S. Cl. 226—7 **29 Claims**

26. A method of operating a web strip orienter, wherein a hollow bar has a limited wrap area longitudinally therealong and across which web strips running between a web strip source and other equipment are caused to travel in passing through the orienter, and comprising:

providing said bar with a primary bowed relation to the web strips and guiding the web strips in laterally oriented relation in travelling across the limited wrap area of said bar;

selectively effecting secondary adjustments of the limited wrap area of said bar incrementally along its length, without altering said primary bowed relation, by adjusting a saddle member mounted on said bar and providing said limited wrap area, and thereby effecting adjustment to compensate for variations in web thickness, bulk or length;



and providing flotation air to the wrap area surface of said saddle member from within said hollow bar through means within the hollow bar by which adjusting of said saddle member is effected.

4,239,142

BROAD-DRAWING APPARATUS

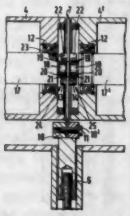
Herbert Schönmeier, Dusseldorf, and Hartmut Dropczynski, Dormagen, both of Fed. Rep. of Germany, assignors to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 26, 1979, Ser. No. 78,990

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843204

Int. Cl.³ B65H *17/20*

U.S. Cl. 226—194 **3 Claims**



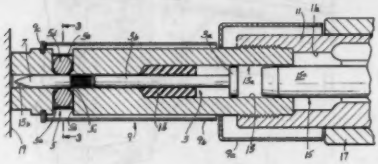
1. A broad-drawing apparatus for moving webs of material such as paper, comprising: a roll having a plurality of individual roll sections mounted on shaft sections, a two-part thrust bearing for determining the degree of curvature being provided for the two adjacent shaft sections of every two adjacent roll sections, ball-and-socket bearing for each shaft section, wherein the ball-and-socket bearings of adjacent shaft sections are disposed side by side on opposite sides of the thrust bearing and wherein each thrust-bearing part of each two part thrust bearing carries one of the adjacent ball-and-socket bearings.

4,239,143

DRIVER ASSEMBLY FOR SMALL-DIAMETER FASTENERS

Peter W. Johnson, Toronto, Canada, assignor to Olin Corporation, New Haven, Conn.

Filed May 21, 1979, Ser. No. 41,027
Int. Cl.³ B25C *1/14, 1/18*
U.S. Cl. 227—10 **9 Claims**



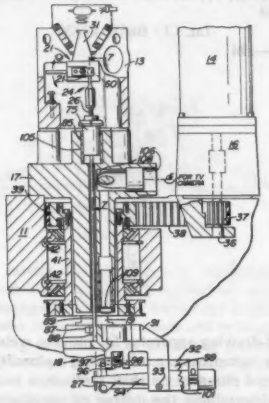
6. A driver assembly, for use with a powder-actuated tool having a tool piston, comprising a tubular muzzle adpter adapted to be carried by the muzzle end of the barrel of the tool, an adapter piston operatively disposed in said muzzle adapter, and retention means on said muzzle adapter for retaining a fastener therein prior to driving thereof, said muzzle adapter being formed with an axial through bore, said bore comprising first and second portions, said first portion being adapted to slidingly admit the shank of the tool piston, said second portion being of substantially smaller diameter than said first portion, and said adapter piston comprising an adapter piston head, skidingly fitted in said first portion of said muzzle adapter bore, and an adapter piston shank, slidingly fitted in said second portion thereof.

4,239,144

APPARATUS FOR WIRE BONDING

Richard J. Elles, Philadelphia; Frederick W. Kulicke, Jr.; Moshe E. Sade, both of Horsham, and Albert Soffa, Wynnewood, all of Pa., assignors to Kulicke & Soffa Industries, Inc., Horsham, Pa.

Filed Nov. 22, 1978, Ser. No. 963,167
Int. Cl.³ B23K *19/04*
U.S. Cl. 228—1 R **24 Claims**



1. Apparatus for fine wire bonding of the type having a rotatable bonding head, the combination comprising:

a fixed machine frame,

a theta drive motor mounted on said frame,

a hollow cylindrical sleeve rotatably mounted on said frame for rotational movement by said theta drive motor,

a bonding tool holder mounted on said hollow cylindrical sleeve for rotation by said theta drive motor,

a bonding tool adapted to be mounted in said bonding tool holder,

said bonding tool holder comprising means for mounting a bonding tool at the center of rotation of said hollow cylindrical sleeve,

a Z-drive motor mounted on said frame for actuating vertical movement of said bonding tool, and

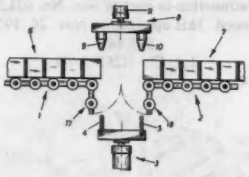
means coupling said Z-drive motor to said bonding tool holder axially aligned with the center of rotation of said hollow cylindrical sleeve, whereby rotational movement of said hollow cylindrical sleeve does not impart vertical movement to said bonding tool.

4,239,145

APPARATUS FOR WELDING EDGE BARS TO BAR GRATES

Hans Martin, Arfkamp 14, and Wilhelm Herbst, Vockengraben 30, both of 4424 Stadtlohn, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,249
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746866
Int. Cl.³ B23K *37/04*
U.S. Cl. 228—6 R **3 Claims**



1. An apparatus for welding edge bars to the edges of support bars and filling bars of bar grates comprising:

a work station;

a first rollerway section disposed on a first side of said work station for supporting and transporting bar grates;

a second rollerway section disposed on a second side of said work station for supporting and transporting bar grates;

transporting means comprising at least a third rollerway section movable into and out of the region of said work station for transporting the bar grates between said first and second rollerway sections;

means for moving said at least third rollerway section out of a space between facing ends of said first and second rollerway sections during a welding operation and for moving said at least third rollerway section into said space during the transporting of bar grates from said first to said second rollerway section;

means for holding a pair of edge bars;

means for moving said edge bar holding means into said space during the welding operation and for moving said edge bar holding means out of said space during the transporting of bar grates from said first to said second rollerway sections;

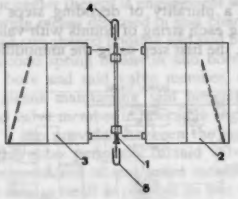
means for welding edge bars to the support and filling bars of bar grates, said welding means being movably disposed at said work station, said apparatus including stop means aligned along the transporting direction of said rollerway sections, means for guiding a bar grate into alignment with said stop means to align the bar grate in a first direction, and means for moving a bar grate into alignment with an edge bar when it is held by said holding means at said work station to align a bar grate in a second direction.

4,239,146

COLLAPSIBLE BOX WITH TWO COMPARTMENTS

Per S. Göranson, Lille Pers väg 4, S-311 00 Falkenberg, Sweden

Filed Jun. 21, 1978, Ser. No. 917,601
Claims priority, application Sweden, Jul. 1, 1977, 7707648
Int. Cl.³ B65D *5/36*
U.S. Cl. 229—15 **5 Claims**



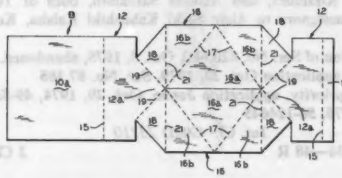
1. A collapsible box with two compartments having a common partition wall and a pair of wall-and-bottom assemblies characterized in that the common partition wall is provided with means for connecting a wall-and-bottom assembly to each side of said partition wall, each of said wall-and-bottom assemblies comprising a main wall, foldable side walls and a bottom which is pivotally connected to the main wall at the underside of the main wall, each of said foldable side walls having a first side edge pivotally connected to said side edge of the main wall and having a second side edge engaged with a said connection means on the partition wall, each of said foldable side walls being formed of two sections which are pivotally connected together at a location between said side edges thereof.

4,239,147

HEAVY DUTY PARTITION

Jeffrey M. Gardner, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Oct. 29, 1979, Ser. No. 89,044
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—15 **3 Claims**



1. A heavy duty partition, formed of a unitary tube of foldable paperboard, for use within an outer container or wrapper, comprising:

(a) a bottom wall;

(b) a pair of opposed side walls foldably joined at their lower edges to opposed side edges of said bottom wall and upstanding therefrom;

(c) each of said side walls presenting a pair of upwardly converging edges;

(d) a central wall extending normally between said side walls and including a pair of panels disposed in face-to-face relation which each other;

(e) gusset means foldably joining opposed ends of each of said central wall panels to adjacent converging edges of related side walls;

(f) each of said gusset means including a pair of generally triangular gusset elements foldably joined to each other with:

(i) one of said gusset elements being foldably joined to an adjacent converging edge of a related side wall and disposed in face-to-face relation therewith;

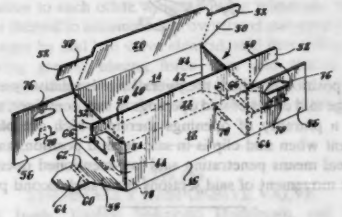
(ii) the other of said gusset elements being formed from material of a related central wall panel and being foldably joined thereto along a diagonal fold line to accommodate the erection of said partition from said tube.

4,239,148

STORAGE BOX

John F. Sorenson, St. Paul, and Frank W. Locke, Minneapolis, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 9, 1979, Ser. No. 55,906
Int. Cl.³ B65D *5/30, 5/22, 5/24*
U.S. Cl. 229—36 **9 Claims**



1. A one-piece storage box comprising:

a bottom wall having a first and second pair of opposed, parallel edges,

a side wall connected to each of the first pair of opposed edges of said bottom wall,

an end wall connected to each of the second pair of opposed edges of said bottom wall, each of said end walls including

a pair of overlapping end panels, each of said overlapping end panels being connected to an edge of one of said side walls and a third end panel connected to one of said second pair of opposed edges of said bottom wall overlapping said pair of end panels, said end panels having means therebetween for locking said panels together, said locking means including

a pair of registered openings in said pair of overlapping end panels,

a bendable tab on said third end panel received through said registered openings and said pair of overlapping end panels and bent downwardly within the interior of said box, and

a tab on the outermost one of said pair of overlapping end panels of each end wall hinged to an edge of the registered opening in said one overlapping end panel, said tab received through the other one of said registered openings in said other one of said pair of overlapping end panels and bent relative thereto,

a top flap for forming a top wall for said storage box connected to an edge of each of said side walls,

the outermost one of said pair of overlapping end panels of each end wall including an opening other than said registered opening therethrough, and

each of said top flaps including a bendable tab extension extending from opposite ends thereof received within said other opening in each of said outermost ones of said pair of overlapping end panels of each end wall.

4,239,149

COMBINATION CLIP AND SEAL CONSTRUCTION FOR SHIPPING CONTAINERS

Julius B. Kupersmit, 145-80 228th St., Springfield Gardens, N.Y. 11413

Filed Jul. 16, 1979, Ser. No. 58,017
Int. Cl.³ B65D *45/00*
U.S. Cl. 229—45 R **3 Claims**

1. In a combination container having a pair of selectively

abuttable walls having aligned openings therein, and an expandable clip simultaneously engaging the edges of said aligned openings to maintain said walls in abutted relation, the improvement comprising: said clip having first and second sections relatively movable between a first position in which the overall size of said clip is relatively diminished, and a

second position in which the overall size is relatively enlarged to engage said edges of said openings in said container, said clip having a plurality of openings therein which are placed in alignment when said clip is in said second position; and elongated seal means penetrating said last-mentioned openings to prevent movement of said sections from said second positon.

4,239,150

FOLDING CARTONS FOR LIQUIDS

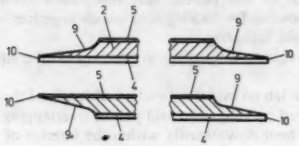
Werner Schadowski, Linnich, and Heinrich Bellut, Myhl, both of Fed. Rep. of Germany, assignors to PKL Papier- und Kunststoff Werke, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 960,537

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750901

Int. Cl.³ B65D *5/42*

U.S. Cl. 229—48 R **6 Claims**



1. In a carton for liquids folded from a sheet of packaging material wherein the carton has a lapped seam with a protected edge, the improvement which comprises providing the protected edge with a wedge-like tapered profile, wherein the taper is relatively more pronounced adjacent where it joins the rest of the sheet material and is relatively less pronounced therebeyond toward its tip, whereby the thickness of the sheet material is reduced along the protected edge.

4,239,151

METHOD AND APPARATUS FOR REDUCING THE NUMBER OF REJECTED DOCUMENTS WHEN READING BAR CODES

Mats A. Enser, and Nils G. Stalberg, both of Lidingö, Sweden, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 902,468, May 3, 1978, abandoned. This application Apr. 19, 1979, Ser. No. 31,656

Int. Cl.³ G06K *5/00, 7/08, 7/10*; G11B *25/04*

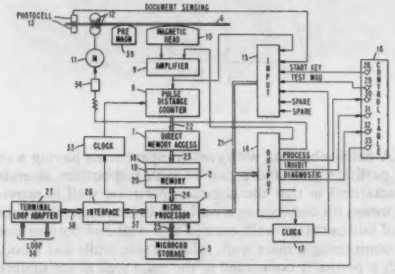
U.S. Cl. 235—437 **7 Claims**

1. A method for reducing the number of rejected documents when reading and decoding character information recorded on a document in a bar code based on the distance between adjacent bars comprising:

producing electrical pulses representing the bars by feeding the document containing the bars passed a reading means,

counting the time between each two pulses with a counter and storing the counts produced by the counter in strings representating individual characters where the counts are positioned in the string in the order in which the related pulses were produced by the reading means,

performing a plurality of decoding steps each involving comparing each string of counts with valid combinations of counts, the first step using the unmodified stored string



in the comparison on an assumption that there are no errors in counts, the second step using a first modification of the stored string in the comparison on an assumption that a correctable error of a first type exists in the counts, the third step using a second modification of the stored string in the comparison based on an assumption that a correctable error of a second type exists in the counts, interrupting the decoding at any step producing a valid decoding of a character, and transferring such a valid decoding to user means.

4,239,152

TEMPERATURE RESPONSIVE VALVE ASSEMBLY

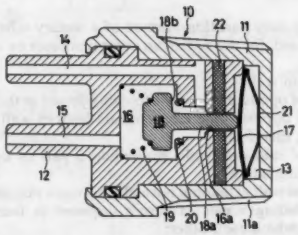
Kazuhiko Kitamura, and Atsushi Satomoto, both of Tokyo, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 620,680, Oct. 8, 1975, abandoned. This application Oct. 22, 1979, Ser. No. 87,185

Claims priority, application Japan, Oct. 29, 1974, 49-53509; May 5, 1975, 50-124645

Int. Cl.³ G05D *23/10*

U.S. Cl. 236—48 R **2 Claims**



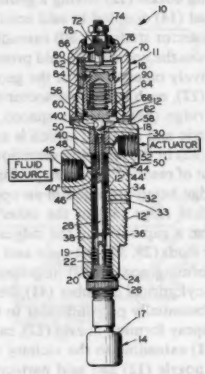
1. A temperature responsive valve assembly comprising a cup-shaped housing of heat conductive material adapted to be disposed within a fluid the temperature of which is to be sensed for controlling the valve assembly and a valve body of non-heat conductive material secured in said housing means with one end thereof spaced from the bottom of said cup-shaped housing to define a chamber, a bore located in said one end of said valve body, passage means in said valve body including

first and second fluid passages adapted to contain a fluid to be controlled by the valve assembly, said first and second passages each opening into the bottom of said bore with a flat valve seat surrounding one of said passages, a valve member slidably disposed within said bore in said valve body, said valve member having a flat surface engagable with said flat valve seat, a bimetallic snap disc member disposed in said chamber with the center thereof in engagement with said valve member, first spring means disposed in said chamber between the bottom of said cup-shaped housing and said bimetallic snap disc member, second spring means in said bore between the bottom of said bore and said valve member, said first and second spring means maintaining said bimetallic snap disc member and said valve member in operative engagement with each other and a gap provided between the inner surface of said bore and the outer periphery of said valve member to facilitate the reciprocation of said valve member within said bore, said gap being as small as possible so that the fluid flow from said fluid passages into said chamber will be so minimum that it can be neglected.

4,239,153
MULTIPLE TEMPERATURE ACTUATED FLUID-ELECTRIC CONTROL DEVICE

Larry E. Monigold, and Ronald G. Cadwell, both of Cadillac, Mich., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed Dec. 29, 1978, Ser. No. 974,449
Int. Cl.[3] G05D *23/12*
U.S. Cl. 236—86 6 Claims



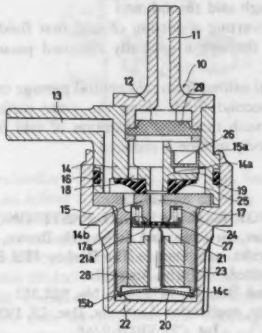
1. A temperature responsive control device having sequential fluid flow control and electrical circuit control functions comprising:

a body having a passage with a thermoexpansion element on one end thereof and a slide pin with an inner hollow nose in said passage, said slide pin being shiftable by said element; an inlet port and an outlet port communicant with said passage and with each other through said slide pin hollow nose; a ball valve in said passage including a valve seat and a ball valve element engageable by said slide pin nose to close said hollow nose and to also shift said ball valve element off said valve seat to open said ball valve; a vent port in said body communicable with said outlet port through said ball valve when said ball valve is open; an electrical switch subassembly on the opposite side of said ball valve from said slide pin, shiftable plunger means between said ball valve element and said electrical switch subassembly, shiftable toward the latter by shifting of said ball valve element off said valve seat, said plunger means comprising a plunger in engagement with said ball valve element, a sleeve extending toward said electrical switch subassembly, and at least one inner element telescopically fitted within said sleeve and movable therein, first spring means for biasing said plunger means away from said electrical switch subassembly and toward said ball valve element, so that shifting of said plunger means is against the bias of said first spring means to cause said inner element to actuate said electrical switch subassembly sequentially to the opening of said valve, whereby said control element causes sequential control of functions in response to increasing temperature, the first control step being directly by said ball valve, and the second control step being indirectly by said ball valve causing shifting of said switch subassembly, second spring means between said inner element and said plunger for biasing said inner element and plunger to a telescopically extended position relative to each other while allowing telescopic contraction thereof to accommodate overtravel movement of said plunger by said ball valve element, said first spring means having greater biasing force than said second spring means; and means for sealing said electrical switch subassembly within said body and from said ball valve and said passage.

4,239,154
THERMALLY RESPONSIVE VALVE

Masami Inada, Kariya; Nobuyuki Hashimoto, and Atsushi Satomoto, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Apr. 16, 1979, Ser. No. 30,366
Claims priority, application Japan, May 25, 1978, 53-70919
Int. Cl.[3] G05D *23/08*
U.S. Cl. 236—87 3 Claims



1. A thermally responsive valve comprising a body provided with an inlet port and an outlet port and separated into an upper portion and a lower portion spaced from said upper portion;

first, second, and third passages arranged in parallel to one another provided in said body and connecting said inlet port with said outlet port respectively, wherein a part of said first passage is defined by said lower and upper portions of said body and the space therebetween, and a part of said third passage encloses said part of said first passage defined by said space;

a bimetal operated valve disposed in said first passage; and

a check-valve having a base and a lip portion and having said base portion positioned between said third passage and said first passage for permitting fluid flow only from said inlet port to said outlet port, wherein said checkvalve is made of elastic material and said base is disposed between and sealingly contacts said upper portion and said lower portion to maintain a fluid-tight sealing therebetween and to fluid tightly separate said parts of said first and third passages and wherein said lip portion permits fluid flow

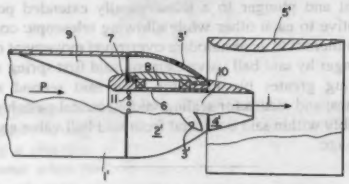
through said second passage only from said inlet to said outlet.

4,239,155

CORE-FLOW ROTARY JET

Joseph V. Foa, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,927
Int. Cl.³ B63H *25/46*
U.S. Cl. 239—265.17 **19 Claims**



1. A core-flow rotary jet comprising:

a source of pressurized first fluid,

rotor means including at least one nozzle,

a supply duct connected between said source of first fluid and said rotor means,

a shrouded afterbody disposed behind, and coaxially with, the rotor such that said pressurized first fluid issuing from said at least one nozzle induces flow of ambient second fluid through said shroud, and

means for diverting a portion of said first fluid from said rotor and through a centrally disposed passage in said afterbody,

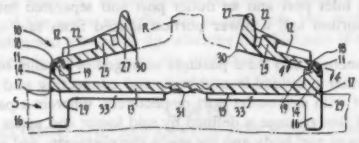
whereby fluid exiting from said central passage entrains said first and second fluids along the outer surface of said afterbody such that flow separation of said fluids along said afterbody surface is reduced.

4,239,156

PAD FOR RAILWAY RAIL FASTENINGS

David H. Skinner, Donvale, and Jeffrey H. Brown, Armadale, both of Australia, assignors to The Broken Hill Proprietary Company Limited, Victoria, Australia

Filed Dec. 12, 1978, Ser. No. 968,813
Claims priority, application Australia, Dec. 23, 1977, PD2885
Int. Cl.³ E01B *9/68*
U.S. Cl. 238—277 **9 Claims**



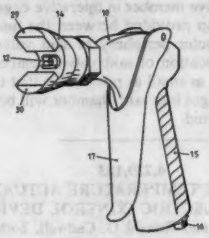
2. An insulation pad for rails on sleepers, said pad comprising a base section adapted, in use, to be interposed between a rail and an underlying sleeper, and two upper sections adapted, in use, to extend over the respective upper surfaces of the rail foot, said upper sections being formed integrally with said base section, wherein the upper sections are hingedly connected to the respective side edges of the base section, which hinges are formed by sections of pad material of reduced thickness, and wherein the upper sections and the associated side edges of the base section adjacent the respective hinges incorporate alternating interlocking knuckle and groove arrangements for resisting differential movement between the upper sections and the base section longitudinally of said hinges.

4,239,157

HIGH PRESSURE SPRAY GUN

Anders G. Fasth, Skara, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Mar. 26, 1979, Ser. No. 23,588
Claims priority, application Sweden, Apr. 11, 1978, 7804033
Int. Cl.³ B05B *1/04*
U.S. Cl. 239—288.5 **4 Claims**



1. In an airless high pressure spray gun, comprising:

a gun body (**10**);

a spray material valve (**11**) disposed in the gun body;

a spray forming nozzle (**12**) having a geometric axis (**31**); and a safety head (**14**) coupled to said nozzle (**12**) and including two protector studs (**29, 30**) extending in the spraying direction from the nozzle (**12**), said protector studs extending respectively on each side of the geometric axis (**31**) of the nozzle (**12**), each of said protector studs comprising a transverse ridge (**34**) which is spaced transversely from said geometric axis (**31**) and which is axially spaced from the nozzle (**12**) in the spraying direction, said ridge being disposed out of reach of the spray jet formed by the nozzle and said ridge being arranged in an opposed relationship to an identical ridge (**35**) of the other of said protector studs to form a gap between the ridges (**34,35**);

said protector studs (**29, 30**), between said ridges (**34, 35**) and the spray forming nozzle (**12**), together forming an open ended part-cylindrical chamber (**41**) the geometric axis of which is substantially perpendicular to the geometric axis (**31**) of the spray forming nozzle (**12**), said part-cylindrical chamber (**41**) extending to the vicinity of the spray opening of said nozzle (**12**) and said part-cylindrical chamber (**41**) having a diameter which exceeds the width of said gap between said opposed ridges (**34, 35**).

4,239,158

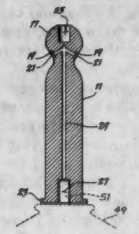
SPRAY HEAD EXTENSION FOR PRESSURE DISPENSERS

William H. Gates, Santa Ana, Calif., assignor to George L. Moyles and Roy Shook, both of Fullerton, Calif., part interest to each

Filed Apr. 23, 1979, Ser. No. 32,400
Int. Cl.³ B05B *7/24*; B65D *83/14*
U.S. Cl. 239—567 **6 Claims**

1. An elongated fluid conduit closed at one end, the other end thereof having a socket constructed and arranged to receive and fixedly engage a depressible valve stem of a pressurized container, the valve stem communicating with said fluid conduit to release the contents of the pressurized container into said fluid conduit when the closed end of said fluid conduit is pressed against a fixed surface thereby depressing the valve stem, said fluid conduit having a plurality of tubular openings therethrough adjacent said closed end thereof for dispersing from said fluid conduit the contents of the pressurized con-

tainer released thereinto, said plurality of tubular openings being angled outwardly and back toward said other end so as



to disperse the contents of the pressurized container outwardly from said fluid conduit and backwardly toward said other end.

4,239,159

PRODUCTION OF FINE METAL POWDERS

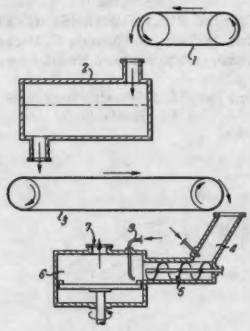
Dereck R. Johns, Hillsborough, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 13, 1979, Ser. No. 11,749

Claims priority, application United Kingdom, Feb. 13, 1978, 5612/78

Int. Cl.³ B02C *23/24*

U.S. Cl. 241—23 **3 Claims**



1. A method of comminuting oversize ductile metal powder particles produced by water or gas atomization comprising the steps of impacting the particles to increase their length to thickness ratio thus producing generally elongated flattened particles, cooling the elongated particles to a temperature at which the elongated particles become embrittled and further comminuting the embrittled particles to produce relatively fine powder.

4,239,160

FILM SHREDDER

William E. Hawkins, and C. George Huskey, both of Circleville, Ohio, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 17, 1979, Ser. No. 39,945

Int. Cl.³ B02C *18/16, 18/44*

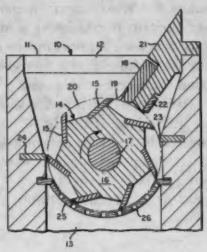
U.S. Cl. 241—222 **7 Claims**

1. A device for shredding laterally extended film material of indefinite length comprising

(a) a housing with an inlet and an outlet,

(b) cutting means rotatably mounted in the housing and having a smooth cutting edge,

(c) a stationary knife having a serrated edge mounted on the housing with the serrated edge positioned at the periphery of the path of the smooth cutting edge of the rotatable cutting means and with the serrated edge projecting into



and directed toward the housing inlet against the direction of rotation of the rotatable cutting means.

4,239,161

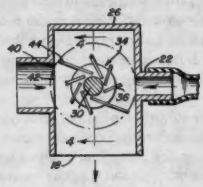
COKE GRINDER

Owen R. Waltrip, Roseville, Calif., assignor to Nuclear Supreme, Casper, Wyo.

Filed Mar. 27, 1979, Ser. No. 24,327

Int. Cl.³ B02C *18/18*

U.S. Cl. 241—46.02 **8 Claims**



1. In a device for comminuting coke logs, including a housing having an infeed opening therein forming a fixed cutting edge, and a rotor body enclosed within the housing and rotatable in one direction about a rotational axis, said rotor body having an outer cylindrical surface from which a plurality of cutting blades project, each of said cutting blades having an outer cutting tip radially spaced from the outer surface and a radially inner end, the improvement residing in slot means formed in the rotor body for holding each of said blades at a predetermined forward angle at the outer surface in the direction of rotation relative to a radial line extending from the rotational axis, anchoring means extending radially into the rotor body from said outer surface between the blades for engagement with each of said blades intermediate the outer cutting tip and the inner end, and means connected to the housing for introducing coke logs at a predetermined infeed rate through said infeed opening in a direction transverse to said rotational axis, said housing having an outlet opening positioned below the infeed opening from which coke is gravitationally discharged.

4,239,162

FIBER TRAVERSING SPIRAL

Herbert W. Barch, Natrona Heights, and Rudolph Blair, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

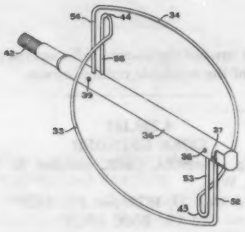
Filed Jun. 1, 1979, Ser. No. 44,604

Int. Cl.³ B65H *54/28*

U.S. Cl. 242—43 R **5 Claims**

1. A spiral traversing device comprising a rotatable axle, a first wire strand support means generally in an oval planar

shape, a second wire strand support means generally in an oval planar shape, two wire support means for said first wire strand support means, two wire support means for said second wire strand support means, the wire support means for the first and second wire strand support means being constructed to maintain said first and second wire support means at generally equal distances from said axle at all points in an oval planar shape and at an angle such that the plane of said wire ovals is at an angle to said axle, said wire support means for said first strand support means being affixed to the axle at spaced apart fixed distances along said axle thereby defining the length of the oval, said second wire support means for said second strand support means being affixed to the axle at spaced apart fixed distances along said axle thereby defining the length of the



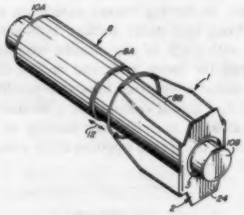
oval, the point of attachment of the wire strand support means to said first strand support means being higher than the point of attachment of the adjacent wire support means to said second strand support means at one point above the axle, and the point of attachment of the wire support means to said first wire strand support means being lower than the point of attachment of the adjacent wire support means to said second wire strand support means at its other point of attachment to the axle to thereby permit strand riding on said second wire strand support means to transfer from said second wire strand support means to said first wire strand support means at one end of said axle and from said first wire strand support means to said second wire strand support means at the opposite end of said axle.

4,239,163

ROLL HOLDER FRICTION BRAKE

Glen H. Christian, 901 S. Sarnoff Dr., Tucson, Ariz. 85710

Filed Jan. 21, 1980, Ser. No. 113,593
Int. Cl.[3] B65H *19/00*
U.S. Cl. 242—55.2 **10 Claims**



1. A brake device for a paper roll holder, the roll holder including

(i) a spindle assembly including first and second telescoping sections, the first and second telescoping sections being cylindrical and aligned along a first axis, the first telescoping section, having a first diameter, the first and second telescoping sections being biased outwardly from each other along the first axis,

(ii) a spindle support, and

(iii) first and second bearing ends for engaging the spindle support, the first and second bearing ends being attached, respectively, to the free ends of the first and second telescoping sections, the first and second bearing ends being aligned with the first axis, the first bearing means having a second diameter, the second diameter being less than the first diameter,

said brake device comprising in combination:

a. base plate means for frictionally engaging a first portion of the spindle support to tend to resist rotation of the paper roll, said base plate means having a hole therein, said hole having a third diameter which is less than the first diameter and greater than the second diameter, the first bearing end passing through said hole, said base plate means having first and second opposed faces, a portion of the first face frictionally engaging the first portion of the spindle support; and

b. core-engaging means attached to the second face of said base plate means for snuggly engaging the inner surface of a core on which the paper roll is wound to cause said base plate means to rotate with the paper roll, the spring bias causing the first telescoping section to press the first surface of said base plate means, causing a second portion of the second face of said base plate means to be pressed against the first portion of the spindle support to effect said frictional engaging,

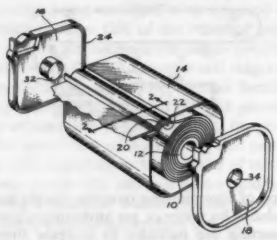
whereby said brake device slows free rotation of the paper roll, preventing excessive unwinding of the paper roll.

4,239,164

LIGHT LOCK FOR ROLL DISPENSING CONTAINER

Clive D. Barnabee, Webster, and Marvin G. Decker, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,499
Int. Cl.[3] B65H *19/02*
U.S. Cl. 242—55.53 **1 Claim**



1. In a container having a generally tubular casing member and a pair of laterally opposed end walls enclosing a chamber for a roll of strip material with a light-sensitive, abradable layer, the improvement comprising:

a first elongated lip on the casing member extending in a direction substantially axially of the casing member;

a second elongated lip on the casing member substantially parallel to said first lip, said second lip being movable toward and away from said first lip to form therebetween a variable width slot which (1) communicates with the chamber, (2) provides a path through which strip material may be tensioned and pulled from the chamber with its light-sensitive layer toward said first lip and (3) is curved partially about an axis that is transverse to the direction of movement of strip material being pulled through the slot and is located on the same side of said slot as said second lip;

an annular recess on each of said end walls for receiving one end of the casing member and said lips, said annular recesses being enlarged in the region of said second lip for

permitting movement of said second lip away from said first lip;

means for rotatably supporting a roll of strip material in the chamber with resistance of the roll turning; and

resilient means for urging said second lip toward said first lip to clamp in said curved slot a portion of the strip material between said first and second lips with a predetermined pressure, whereby tension produced in said strip material is pulling it from the chamber produces a resultant force which opposes the force of said resilient means to at least partially relieve the pressure of the light sensitive layer of the strip material against said first lip.

4,239,165

UNWINDING STAND FOR A PLURALITY OF ROLLS OF MATERIAL

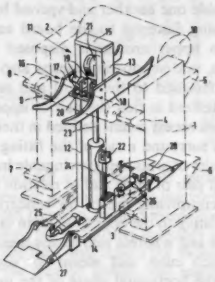
Peter Weiss, Neuss, Fed. Rep. of Germany, assignor to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 33,924

Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819295

Int. Cl.³ B65H *19/30*

U.S. Cl. 242—58.6 **6 Claims**



1. In an unwinding stand for a plurality of rolls of material having elevating means for raising individual rolls of material to the level of bearing brackets mounted on stand columns and disposed on either side of the unwinding stand, the improvement wherein the elevating means comprises: a guide column disposed between the stand columns; an elevating platform with dual outriggers; and means guiding the elevating platform on said guide column for the loading of the bearing-brackets disposed on both sides of the stand with rolls of material.

4,239,166

POWER-DRIVEN REWIND DEVICE OF A CAMERA

Koichi Daitoku, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 75,332

Claims priority, application Japan, Sep. 14, 1978, 53/125459[U]

Int. Cl.³ G03B *1/04*

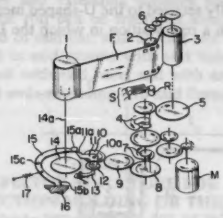
U.S. Cl. 242—71.6 **5 Claims**

1. In a device for driving, by a motor, a first spool shaft for supplying the film of a camera and a second spool shaft for taking up the supplied film, the improvement in a power-driven rewind device for rewinding the film taken up on said second spool shaft onto said first spool shaft comprising:

(a) first gear means (14) coupled to and rotatable with said first spool shaft;

(b) second gear means (10) operatively associated with the rotation of said motor when said film is rewound;

(c) third gear means (12) meshing with both of said first and said second gear means and displaceable between a coupled position for enabling the transmission of the rotation of said motor to said first spool shaft and a disengaged position in which said third gear means is retracted from said coupled position to cut off said transmission; and



(d) change-over means (11) operatively associated with the rotation of said second gear means to displace said third gear means to said coupled position.

4,239,167

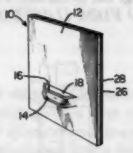
WALL-MOUNTED EYEGLASS HOLDER

G. William Lane, 2555 Cherryridge Rd., Englewood, Colo. 80110

Filed Jan. 23, 1979, Ser. No. 5,684

Int. Cl.³ E04G *3/00*

U.S. Cl. 248—205 A **6 Claims**



1. In an eyeglass holder adapted for supporting a pair of eyeglasses on a flat surface wherein a pair of eyeglasses have a lens frame and temple bars pivotally connected to opposite sides of said frame, the improvement comprising:

a substantially planar body panel;

holder-securing means on one surface of said body panel adapted for supporting said body panel on a flat surface; and

a substantially rigid support bracket in the form of an arch projecting forwardly away from the plane of said body panel and defining a temple bar-receiving opening between said arch and said body panel sized to permit free insertion of one of said temple bars of said eyeglasses therethrough until the pivotal connection between the temple piece and the frame engages said support bracket with said frame facing away from said body panel, said arch provided with eyeglass supporting means in the form of a reinforcing portion of generally V-shaped cross-sectional configuration extending lengthwise of said arch in spaced, substantially parallel relation to said body panel.

4,239,168

RETAINING DEVICE FOR AN OBSTACLE RAIL

Louis Colonna des Princes, Haras de Vauptain, 78530 Buc, France

Filed Jan. 30, 1979, Ser. No. 7,927

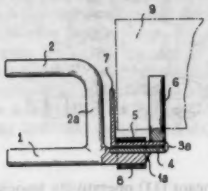
Claims priority, application France, Mar. 9, 1978, 78 06788

Int. Cl.³ A63B *5/02*; A01K *15/02*; F16M *13/00*

U.S. Cl. 248—293 **8 Claims**

1. A retaining device for an obstacle rail comprising a mounting-piece including means for securing the retaining device at an adjustable level on a side-post or the like, the retaining device further comprising a U-shaped member

adapted to receive and support a portion of a rail and a hinge having two plates connected by a hinge-pin which is parallel to a said rail in the supported position of a said rail, one of the plates being rigidly secured to the U-shaped member and being movable between a rest position in which the U-shaped member is adapted to serve as a rail support and a position in which the U-shaped member is adapted to release a supported rail, the other plate being secured to the mounting piece and being adapted to serve as a stop for the U-shaped member in the rest position.

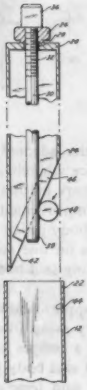


4,239,169

DISPLAY STAND

John DeSantis, 115 Overlook Ave., Staten Island, N.Y. 10304

Filed Aug. 20, 1979, Ser. No. 67,739
Int. Cl.[3] F16M *11/00*; F16B *7/10*
U.S. Cl. 248—412 8 Claims



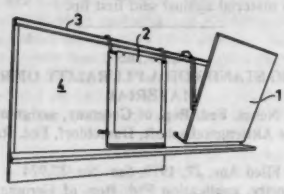
1. A display stand comprising first and second telescopically engaged elongated stand elements, said first element having an inner end received within said second element and a remote outer end; said first end having an inclined face located at an angle to the longitudinal axis of said first element; an elongated rod extending through said first element from a first end adjacent the first end of said first stand element to a second end extending beyond the second end of the first stand element; a cam member secured to the first end of the rod in position to engage the inclined face of said first stand element; said second end of the rod being threaded, and a nut threadedly engaged with said rod and bearing against the second end of said first stand element whereby rotation of the nut in a first direction moves said cam against said inclined face and wedges it between said inside face and the inner surface of said second stand element to lock said elements together; and rotation of said nut in an opposite direction moves the cam away from said inclined face and the inner surface of said second stand element to permit said stand elements to telescope with respect to one another.

4,239,170

MEANS FOR SUPPORTING A WRITING BOARD OR THE LIKE

Sten Planebo, Järfälla, Sweden, assignor to Pendax Interior AB, Stockholm, Sweden

Filed Jan. 3, 1978, Ser. No. 866,231
Claims priority, application Sweden, Jan. 4, 1977, 7700055; Oct. 7, 1977, 7711300
Int. Cl.[3] F16M *13/00*
U.S. Cl. 248—441 B 2 Claims



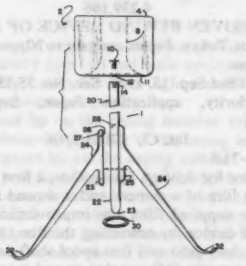
1. Supporting means for a writing board, overhead screen, notice board or the like comprising a pair of upper arms disposed alongside one another and spaced by a certain distance, said arms being fastened to the board and displaceably suspended from upper arm ends disposed in fixed horizontal fitting means, said supporting means also including a pair of lower arms fastened to the board and supported by a fixed wall, characterized in that the pair of upper arms have downwardly opened recess means defined in their upper ends, which recess means surround a rail of the fitting means, the arms of one of said pairs of arms being swingable in relation to the arms of the second pair of arms and in relation to a horizontal axis; and further comprising means for rendering said upper arms swingable relative to the board, wherein said upper ends terminate in a cube and wherein said recess means comprise a recess formed in each cube, and means for supporting each cube pivotally in the horizontal plane of the upper arms to permit the upper arms to swing in two directions from a neutral position.

4,239,171

BOOK SUPPORT

Edward Huls, and Christina Huls, both of 4801 Kahala Ave., Honolulu, Hi. 96816

Filed Jan. 31, 1978, Ser. No. 873,811
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—558 14 Claims



1. A reading stand apparatus comprising a book holding support means, a pole having openings in a lower portion for attaching legs, connecting means for connecting the pole to the book holding support means, a plurality of legs having elongated shank portions and having proximal and distal ends, the proximal ends having elongated fastening means connected to

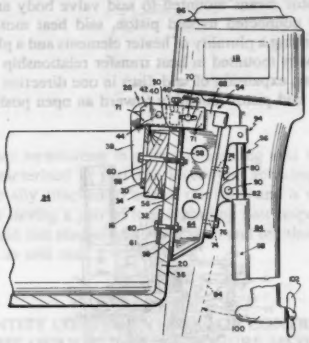
the pole in upward angular relation to the shanks, securing dowels connected to the elongated fastening means at the proximal ends for engaging the openings in the lower portion of the pole, clamping means connected to the elongated fastening means for holding proximal ends against the pole.

4,239,172

ENGINE MOUNT FOR MARINE CRAFT

Gordon Spitzmesser, 1405 Cherokee Dr., West Columbia, S.C. 29169

Filed May 25, 1979, Ser. No. 42,527
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—641 **12 Claims**



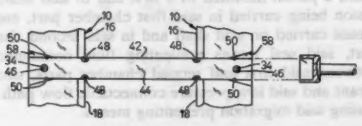
9. An engine mount for a marine craft outboard engine comprising first means for mounting over the vertically upper edge of the marine craft transom, second means for attachment to the first means, means for selectively movably attaching the second means from the first, and means for mounting the engine rearwardly of the second means, the engine mounting means including an engine carrier which permits tilting movement of the engine to position the axis of rotation of the engine propeller such that it points downwardly away from the transom and upwardly toward the transom.

4,239,173

CONCRETE CONSTRUCTION FORM AND TIE ROD

Robert D. Sawyer, 10308 W. Bluemound Rd., Apt. 220, Wauwatosa, Wis. 53226

Filed Apr. 13, 1978, Ser. No. 895,747
Int. Cl.³ E04G *17/08*
U.S. Cl. 249—41 **7 Claims**



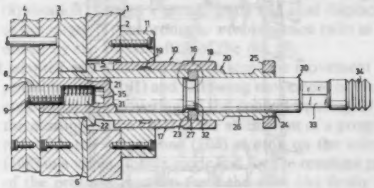
1. In combination: a concrete construction form for use in casting concrete, said concrete construction form having opposed faces, one of said faces defining a concrete forming surface, a top wall, a bottom wall, and planar vertical side walls, said side walls including front and rear edges and one of said side walls including a groove extending transverse to said edges and therebetween, and a bore in said groove through said vertical side wall, said bore having an axis generally parallel to said opposed faces, and said groove having a flared portion from said bore toward said rear edge; and a tie rod comprising an elongated, thin, planar metal bar having opposed faces, edges and opposite ends, and having a hole extending through at least one of said opposite ends and transverse to said opposed faces, and said bar having a reduced thickness in a plane extending transverse to the longitudinal axis of said bar and extending through one of said holes whereby said tie rod can be fractured along said plane by twisting the end of said bar, said at least one of said opposite ends positioned in said groove with said hole in said tie rod coaxially aligned with said bore, and with an end portion of said one of said ends extending into said flared portion of said groove.

4,239,174

TWO STEP EJECTOR STRUCTURE FOR A MOLD FOR INJECTION MOLDING OR THE LIKE

Hans Muller, Femte Villagatan 12, 502 44 Boras, and Nils G. Nilsson, Bergslanten, 520 15 Hokerum, both of Sweden

Filed Nov. 14, 1979, Ser. No. 94,126
Claims priority, application Sweden, Nov. 14, 1978, 7811723
Int. Cl.² B29C *7/00*; B29F *1/14*
U.S. Cl. 249—67 **5 Claims**



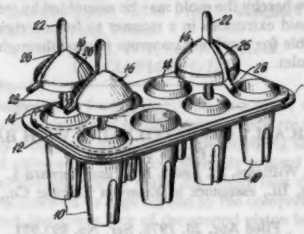
1. A two-step ejector structure for molds for injection molding and the like comprising, (i) a first ejector member to be directly acted upon for ejection and to act upon an ejector pin carrier which is to be displaced in the first and second ejector steps, and a second ejector member acting upon a second ejector pin carrier which is to be displaced only in the first ejector step and (ii) coupling means to accomplish the movement of said second ejector member during a predetermined first portion of the ejector movement of the first ejector member and thereafter release said first ejector member from said second ejector member and lock said second ejector member to a member securedly connected to a tool.

4,239,175

MOLD FOR FORMING FROZEN FOOD PRODUCT AND CAP MEMBER THEREFOR

Paul Straubinger, 21-33 28th St., Astoria, N.Y. 11105

Filed Nov. 19, 1979, Ser. No. 95,404
Int. Cl.³ A23G *9/26*
U.S. Cl. 249—92 **9 Claims**



1. In a mold for preparing a frozen food product from a liquid, comprising at least one cup member each adapted to retain a liquid food product and having a respective cap member adapted to fit thereover, each said cap member having a generally domed shaped central portion and including a handle

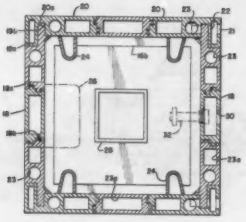
portion extending from the outer surface of said central portion and an anchoring portion adapted to extend centrally within the respective cup member, whereby liquid retained in each said cup member may be made to freeze about the respective anchoring portion and said cap member may then be removed and inverted to form a respective drip tray adapted to catch drippings from the frozen product, the improvement comprising a respective straw member communicating interiorly of each said central portion and extending outwardly from said central portion to enable liquid caught in said central portion to be drawn off by the user.

4,239,176

CONCRETE CONSTRUCTION SYSTEM

Rafael D. Salazar, 6425 SW. 96th St., Miami, Fla. 33156

Filed May 30, 1978, Ser. No. 910,860
Int. Cl.³ B22D *19/04*; B41B *11/58*
U.S. Cl. 249—97 **8 Claims**



1. A mold assembly for forming pre-cast concrete structures, said mold assembly comprising:

a plurality of forming walls, each of said forming walls including a plurality of longitudinal extrusions adapted for releasable interlocking engagement to enable assembly and disassembly of each of said forming walls, at least one of said forming walls being a bottom wall to be supported on a horizontal surface, at least two of said forming walls being engaged with opposed parallel longitudinal sides of said one forming wall to define mold corners and at least a portion of one of said forming walls opposite said bottom wall being open to provide a pouring inlet;

a pair of end caps to close the mold at each end;

fastening means to secure said pair of end caps to said plurality of forming walls; and

each of said extrusions being of generally rectangular cross-section and hollow to provide an outside wall, an inside wall and a pair of edge walls, the edge walls of at least two adjacent extrusions having complementing channel and ridge formations in interlocking relationship, and at said mold corners said extrusions having interlocking edges defined by a complementing tongue and groove connection whereby the mold may be assembled by interconnecting said extrusions in a manner to form a rigid structure suitable for receiving concrete poured through said pouring inlet.

4,239,177

ELECTRICALLY OPERATED VALVE WITH BALANCED PORT DESIGN

Steven E. Williams, St. Louis, Mo., and Bernard L. Kunz, Collinsville, Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 20, 1978, Ser. No. 897,951
Int. Cl.³ F16K *31/04*; G05D *23/08*
U.S. Cl. 251—11 **6 Claims**

1. A valve, comprising:

a valve body having an inlet, an outlet, a main flow passageway between said inlet and said outlet, and a valve seat in said passage, one of said outlet and said inlet being at relatively lower pressure than the other of said inlet and said outlet;

a piston assembly including a shaft mounted for movement with respect to said valve seat, said piston assembly including means for closing said valve;

means defining a first chamber part on one side of said valve seat;

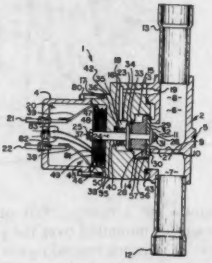
means for defining a second chamber part on the same side of said valve seat as said first chamber part;

means for connecting one of said first and said second chamber parts with one of said inlet and said outlet;

means for connecting the other of said first and said second chamber parts with the other of said inlet and said outlet;

means for biasing said piston toward a closed position;

heat motor means mounted to said valve body and operatively connected to said piston, said heat motor means comprising a plurality of heater elements and a plurality of disc pairs mounted in heat transfer relationship with one another, expansion of said discs in one direction acting to move said piston assembly toward an open position;



means at least partially carried by said shaft to prevent migration of flow to said heat motor so that operation of said valve is independent of the fluid variables carried by the valve, said last mentioned means including at least one flow path connectable between one of said first and second chambers and the relatively lower pressure at one of said inlet and said outlet, said means for defining said first chamber part comprises a top plate mounted to said valve body, said top plate including a chamber having first and second diametric sections for delimiting said first and second chamber parts, said piston assembly including a shaft, a piston mounted to a first end of said shaft, said piston being carried in said first chamber part, and seal means carried on said shaft and in said second chamber part, said seal means preventing fluid communication between said first and second chamber parts, said seal means and said low pressure connectable flow path comprising said migration preventing means.

4,239,178

MANUAL ACTUATOR FOR MOTOR DRIVEN CONTROL VALVE

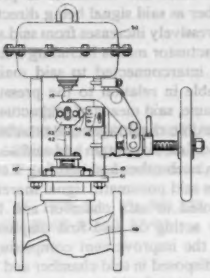
Hans O. Engel, and Wolfgang Lueneburg, both of, Hanau, Fed. Rep. of Germany, assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1979, Ser. No. 38,438
Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821100
Int. Cl.³ F16K *31/52*, *31/14*
U.S. Cl. 251—14 **10 Claims**

1. A control valve actuator comprising

a valve housing,

a valve stem projecting from said housing,
a motor actuator mounted by spaced apart studs on said valve housing, said motor actuator acting by means of said valve stem on the valve, and
a manual actuator laterally mounted on the studs and acting on said valve stem by means of a lever-type actuating



means terminating in a cam contacting said valve stem, characterized in that the lever-type actuating means is pivotally attached to one of the studs and is shaped as a fork having a pair of legs extending past respective sides of said one stud to said valve stem and terminating at one end as said cam.

4,239,179

QUANTITY CONTROL VALVE FOR CONTROLLING THE QUANTITY OF A PRESSURE MEDIUM

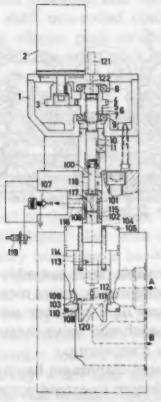
Roland Geier, Viale Europa 72a, I-25100 Brescia, Italy

Filed Aug. 14, 1978, Ser. No. 933,435

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2737153

Int. Cl.³ F16K *31/04*

U.S. Cl. 251—38 **2 Claims**



1. A quantity control valve for controlling the quantity of a pressure medium comprising:

(a) a valve-receiving housing (1) having a pressure medium inlet (A) and outlet (B) and an internal shoulder,

(b) an electric motor (2) supported by the housing and capable of producing angular displacement in either sense of rotation,

(c) a pinion (3),

(d) a threaded nut (5) rotatably mounted within the housing and being driven by the motor through the pinion,

(e) a bush (11) fixed in the housing,

(f) a threaded spigot (7) coating with the nut and being axially movable relative to the bush,

(g) a valve cone (103),

(h) a sleeve (102) fixed to the valve cone and having a control opening (106) therethrough,

(i) a position piston (101) connected to the spigot and being longitudinally slidable therewith and relative to the sleeve,

(j) a pressure spring (104) supported between the housing shoulder and the valve cone,

(k) a non-return valve (107),

(l) a valve seat (108) for the seating of the valve cone in closed position,

(m) a first annular chamber (109) in the housing,

(n) a central conduit (112) in the valve cone,

(o) a radial connection (110) and nozzle (111) connecting between the first annular chamber and control conduit,

(p) a radial duct (113) and connecting spring chamber (114),

(q) a second annular chamber (115),

(r) a third chamber (116),

(s) a central through bore (117), '(t) a fourth chamber (118),

(u) and means for pulsing the motor (2) for achieving pinion (3) rotation through a certain angle and axial displacement of the spigot (7) according to a transmission ratio as determined by the thread pitch of the nut (5),

all adapted and arranged for the stepwise movement of the position piston (101) and following movement of the valve cone (103) and covering of the control opening (106) by the position piston (101) in the attainment of a progressive rise with the valve cone (103) closing on the valve seat (108) in a valve closure mode and for the resultant passage of the pressure medium from the inlet (A) firstly to the first annular chamber (109) and the central conduit (112) and secondly via radial duct (113) into spring chamber (114) for pressurizing the valve cone (103) and thirdly via control opening (106) into second annular chamber (115) and third chamber (116) to the closed non-return valve (107) and fourthly via central through bore (117) to the fourth chamber (118) with the clearance of the control opening (106) being controlled by the movement of the position piston (101) responsively to the upward movement of the spigot (7) according to the driving of the motor (2) and with the valve cone (103) remaining closed until the travel limiting valve is actuated for the opening of the non-return valve (107) with consequent pressure drops in the spring chamber (114) and second annular chamber (115) and fourth annular chamber (118) and third chamber (116) and the lifting of the valve cone (103) from valve seat (108) against the pressure of pressure spring (104) for the covering of the control opening (106) by the position piston (101).

4,239,180

COMPENSATED FORCE VALVE WITH TWO SEATS

Edmond Thuries, Pusignan; Bernard Raynaud, Caluire, and Armand Scarato, Lyon, all of France, assignors to Delle-Alsthom, Villeurbanne, France

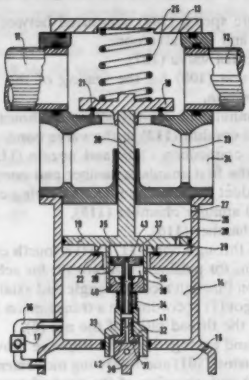
Filed Feb. 7, 1979, Ser. No. 10,282

Int. Cl.³ F16K *31/122*

U.S. Cl. 251—51 **4 Claims**

1. A compensated force valve with two seats, said valve including a first piston and second piston which are connected together by a common shaft, means for mounting said pistons within said valve so as to move commonly toward and away from respective underlying seats, the upper face of the first piston being acted on by a spring and by the compressed gas to be exhausted, the lower face of the second piston being acted on by a compressed gas, and an externally actuated control rod acting on the valve for controlling said exhausting of compressed gas, the improvement comprising an intermediate moving structure interposed between said control rod and said second piston, said intermediate moving structure being constituted by a piston-cylinder assembly including a control cylin-

der and a control piston slidable therein, said control cylinder being integral with said second piston and operatively contacting a stop integral with said control rod and a compression spring biasing the piston-cylinder assembly to return position relative to said rod, whereby there is reduced valve actuating time and reduced control return time with the intermediate moving structure providing improved dampening of the moving parts of said compensated force valve.



4. A valve according to claim 1, wherein the rod of said control piston projects internally of a sheath which abuts against said stop of said control rod when the valve closes and when the valve begins to open, when the control piston compresses the gas in the chamber of the cylinder and moves at the same time as the control rod and which moves away from the stop at the end of the opening of the valve when the latter moves at a higher speed than the control rod

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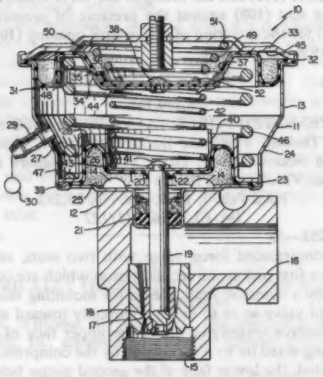
4,239,181

VALVE POSITIONER AND METHOD OF MAKING THE SAME

Harold G. Brakebill, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 22, 1978, Ser. No. 908,209
Int. Cl.³ F16K *31/126*; F01B *19/00*; F02M *25/06*
U.S. Cl. 251—61.5 **2 Claims**



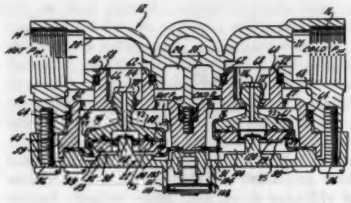
1. In a self-contained valve positioner having a single valve positioner housing including an actuator portion and having a pneumatically operated actuator means therein carrying a main valve member to position said main valve member relative to a main valve seat in a valve unit in relation to the magnitude of a single pneumatic signal directed to said valve positioner and being utilized as the fluid source therein for pneumatically operating said actuator means, said actuator means having means in said housing to cause said actuator means to progressively open,said valve member as said signal being directed to said valve positioner progressively increases from a first value to a second value and thereafter to progressively close said valve member as said signal being directed to said valve positioner progressively increases from said second value to a third value, said actuator means including a first flexible diaphragm operatively interconnected to said main valve member and being movable in relation to the pressure differential acting across the same, said means of said actuator means comprising a second flexible diaphragm not attached to said main valve member, said first diaphragm and said second diaphragm being spaced from each other and defining a chamber therebetween that receives said pneumatic signal therein, a first compression spring disposed in said chamber and having opposed ends respectively acting on said first diaphragm and said second diaphragm, the improvement comprising a second compression spring disposed in said chamber and having opposed ends, one of said ends of said second spring bearing against said housing and the other of said ends of said second spring acting on a retaining means on said second diaphragm such that said second diaphragm is moved toward said valve member against the bias of both said first and second compression springs as said signal increases from said second value to said third value.

4,239,182

DIAPHRAGM MOVABLE WALL ASSEMBLY FOR HYDRAULIC SYSTEMS

Don C. Arnold, Palatine; Julio D. Silletti, Rockford; Richard L. Ritzenthaler, Alden, all of Ill., and Thomas J. Wilcox, East Troy, Wis., assignors to Elkay Manufacturing Company, Oak Brook, Ill.

Division of Ser. No. 739,082, Nov. 5, 1976, Pat. No. 4,174,726.
This application Mar. 8, 1979, Ser. No. 18,786
Int. Cl.³ F16K *31/365*
U.S. Cl. 251—61.2 **1 Claim**



1. A diaphragm movable wall assembly for use in fluid systems including housing means, valve means in said housing means, and a cylindrical fluid chamber within said housing means associated with each said valve means, said diaphragm movable wall assembly comprising:

a circular nonperforated diaphragm having an outer rim for clamping the diaphragm to extend across and divide said fluid chamber of said housing means with one side of said diaphragm sealed from the other side of said diaphragm, a pair of circular elements having a diameter smaller than said diaphragm, a tubular ring securing said elements in assembled form with said diaphragm clamped between said elements and having an annular flexible section free of said elements and inward of said rim to support said assembled elements and said diaphragm as a movable wall assembly in said chamber, means including a stem and valve member carried by one of said elements for operating said valve means, and means for counterbalancing fluid pressure acting on said valve member including an

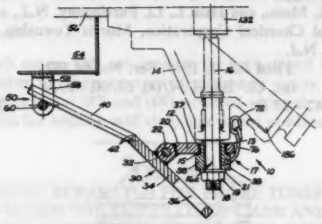
opening in the center of said other element to permit a free section of said diaphragm to float in the opening for counter-balancing purposes, and a passage in said valve stem for admitting liquid from said chamber to said free section of said diaphragm.

4,239,183

HANDLE ASSEMBLY FOR BOTTOM OUTLET VALVE

Glennon L. Basler, and Richard J. Wempe, both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,372
Int. Cl.[3] F16K *35/00, 27/03*
U.S. Cl. 251—144 8 Claims



1. An operating handle assembly for a bottom operable railway tank car lading valve comprising:

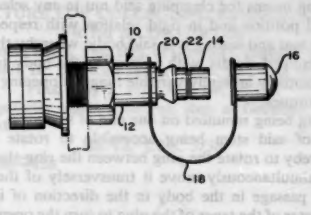
a tank car bottom outlet chamber having an operating shaft passing therethrough to move a valve closure between open and closed positions; said operating shaft including an operating shaft non-round connection portion at its lower end; an adapter plate extending horizontally outwardly from said operating shaft connection portion and including an adapter plate opening through which said operating shaft passes with clearance; said shaft non-round connection portion comprising an upper cylindrical portion which rotates within said adapter plate opening, and a lower non-round portion and wherein said lower non-round portion defines a shoulder which supports said adapter plate; said adapter plate having a distal end; hinge means attached to the distal end; a handle assembly attached to said adapter plate with said hinge means; said handle assembly including a handle connection portion having a non-round slot adapted in one position to engage said non-round connection portion; a handle shaft portion extending upwardly and away from said handle connection portion; said handle shaft portion removably held in place by a bracket located above said shaft connection portion; whereby when said shaft handle portion is in position within said bracket, said handle connection portion is spaced below said adapter plate and said operating shaft connection portion; and whereby said handle is pivotable about said hinge means to an engaged position in which said handle connection portion abuts the lower surface of said adapter plate and said handle connection portion engages said lower non-round portion and said handle is rotatable to move the valve closure between open and closed positions, and whereby after use said handle assembly and said adapter plate are rotatable about said upper cylindrical portion without rotating said operating shaft until said handle aligns with said bracket and said handle shaft portion is reinserted in said bracket.

4,239,184

VALVE STEM

Walter H. Dudar, 1227 Levee St., Dallas, Tex. 75207

Continuation of Ser. No. 890,200, Mar. 27, 1978, abandoned, which is a continuation of Ser. No. 749,228, Dec. 10, 1976, abandoned. This application Apr. 3, 1979, Ser. No. 26,545
Int. Cl.[3] F16K *51/00;* B65B *3/00*
U.S. Cl. 251—149.6 5 Claims



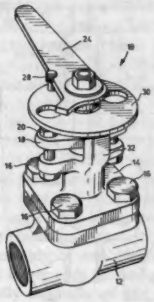
1. A valve stem for a vehicle tire comprising a body portion sized to receive and hold in operative position a valve core to control passage of air into and out of a tire, said valve stem having a plurality of separate grooves recessed into the body portion of the stem on the outside of the stem and at an area of the stem remote from the tire, said grooves being separate from each other and unconnected to each other, each of said grooves being positioned and of different sizes to accept and removably lock quick connect couplers of various sizes to the stem.

4,239,185

VALVE

Walter D. Lowe, 41 Hawksbury Dr., Willowdale, Ontario, Canada (M2K 1M4)

Filed Mar. 29, 1979, Ser. No. 24,980
Int. Cl.[3] F16K *25/00*
U.S. Cl. 251—164 1 Claim



1. A valve comprising:

a body with a through flow passage;

a metal plug having a tapered cylindrical wall extending transversely across said through flow passage;

a metal ring-shaped seat on each of the opposed sides of the tapered cylindrical wall of said plug, each ring-shaped seat being supported in a through flow passage and extending beyond the body toward the plug;

said plug being formed with a through transversely extending opening at said tapered cylindrical wall and being seatable in sealing relation against said seats with its opening misaligned with said through flow passage of said body whereby to close said through opening of said body to flow;

a stem for said metal plug having an axis and having a threaded portion;

a mounting nut in threaded engagement with said threaded portion of said stem;

a seat on said body for said mounting nut shaped to receive and support said nut, said nut being freely rotatable into contact with the body seat while the metal plug is seated in the metal ring-shaped seats with predetermined seating pressure and position;

clamping means for clamping said nut in any selected rotational position and in rigid relation with respect to said body seat and sealing it in said body, whereby the nut can be clamped rigidly with respect to the body to select a substantially infinitely variable range of opening and closing torques;

said plug being mounted on one end of said stem, the other end of said stem being accessible to rotate the stem whereby to rotate the plug between the ring-shaped seats and simultaneously move it transversely of the through flow passage in the body in the direction of increasing diameter of the taper of the plug to turn the opening in the plug from nonalignment with the through flow passage in the body to alignment with the through flow passage in the body whereby to establish flow through the valve and to lift it from the ring-shaped seats in the axial direction of the stem to relieve the tightness of the sealing relation of the plug with the ring-shaped seats; and

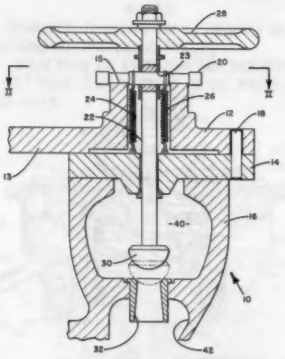
connecting means connecting said stem with said plug for relative movement in the direction transverse of the longitudinal axis of said stem.

4,239,186

TRIP VALVE CONSTRUCTION

Prem Pratap, Pittsburgh, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 18, 1979, Ser. No. 31,233
Int. Cl.³ F16K *31/524*
U.S. Cl. 251—255 **3 Claims**



1. A trip valve comprising:

a valve body including a valve bonnet having a valve seat and a trip lever having a cam-like surface formed at the top thereof, said trip lever overlying the valve bonnet and being joined thereto for permitting movement of the lever relative to the bonnet;

a valve stem movably disposed within the valve body and only movable in a linear path and including a horizontally extending hole formed substantially adjacent to and vertically above the cam-like surface of the trip lever, and valve means formed at the other end thereof and only linearly movable between seat disengaged and seat engaged positions with respect to the valve seat in accordance with movement of the valve stem;

a trip pin passing through the hole formed in the valve stem and supported upon the cam-like surface of the trip lever;

force generating means for urging the valve stem into closed seat engaged position, with a first portion of the cam-like surface of the trip lever generating a force in opposition to the force generated by said force generating means for urging the valve stem and valve means into the open seat disengaged position, said cam-like surface being movable relative to the trip pin through the movement of the trip lever for moving said valve means between said seat disengaged and seat engaged positions; and

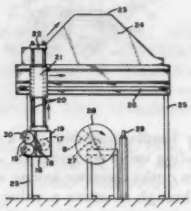
said force generating means including a pair of tension springs, with one end of each spring attached to the trip pin and the other end attached to a non-movable portion of the trip valve, with the springs urging the valve stem through attachment to the trip pin towards the seat engaged position of the valve means.

4,239,187

WINDER STRING-UP METHOD AND APPARATUS

Beryl A. Boggs, Richmond, Va.; Mandayam C. Narasimhan, Seekonk, Mass., and Hsin L. Li, Parsippany, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 2, 1979, Ser. No. 54,352
Int. Cl.³ B65H *54/00, 65/00, 75/28*
U.S. Cl. 242—25 R **7 Claims**



1. A method for the inline string-up of a rapidly advancing filament from a continuous forming operation onto a rotating winding wheel, comprising the steps:

(a) passing the leading portion of said filament into the nip of two counterrotating brush rollers having a peripheral velocity exceeding the velocity of said filament to the extent sufficient to produce a sliding frictional tensioning of the advancing segment of said filament;

(b) moving said brush rollers along a predetermined path passing over said winding wheel to lay a segment of said filament onto the rotating winding surface of said winding wheel; and

(c) cutting said filament within its contact arc on the winding surface and securing the leading portion of the advancing segment of said filament onto the winding surface, whereupon winding of the advancing filament onto said winding wheel proceeds.

4,239,188

TREE HANDLING DEVICE

Edwin L. Hobbs, 10 Lance Ct., Moraga, Calif. 94556

Filed Apr. 30, 1979, Ser. No. 34,463
Int. Cl.³ B66C *23/60*
U.S. Cl. 254—376 **11 Claims**

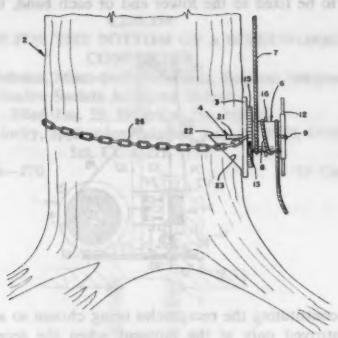
10. A load handling device comprising:

a. a base (3);

b. means (4) attached to said base and adapted for temporary secure engagement with a tree trunk;

c. a cylindrical member (6) mounted on said base and positioned with its longitudinal axis generally at right angles to the axis of said tree;

d. winch means (59) attached to said base;
e. an elongated flexible member (71) mounted on said winch means adapted for encircling said tree trunk;
f. hook means (73) mounted on said base spaced from said winch means;



g. catch means (72) mounted on the end of said elongated member for engagement with said hook means; and
h. ratchet means (67) and (69) mounted adjacent said winch means for holding said strap at a preset position.

4,239,189

HANDLING APPARATUS FOR PROBE TUBES TO BE ATTACHED TO TEMPERATURE GAGE AND/OR SAMPLING LANCES IN THE METALLURGICAL FIELD

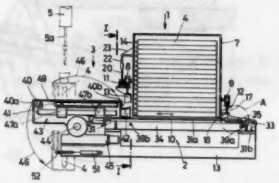
Helmut Scherff, Neukirchen-Vluyn, Fed. Rep. of Germany, assignor to Mannesmann Demag A.G., Duisburg, Fed. Rep. of Germany

Filed Aug. 31, 1979, Ser. No. 71,733

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1978, 2839255

Int. Cl.³ C21B 7/24

U.S. Cl. 266—79 **10 Claims**



1. Apparatus for transferring probe tubes, to be attached to a temperature gage or sampling lance in metallurgical operations, comprising
(a) a storage tank for a plurality of probe tubes;
(b) a transfer mechanism for receiving a selected probe from said storage tank and moving it to a position for engagement with a lance or gage;
(c) a feed mechanism for selecting and moving a probe tube from said storage tank to said transfer mechanism;
(d) said transfer mechanism rotatable from a horizontal receiving position to a vertical feeding position for said probe tubes; the improvement characterized by
(e) a plurality of vertically stacked probe tubes positioned in said storage tank;
(f) an opening in the front wall of said storage tank adjacent the bottom row of each stack of probe tubes;
(g) said probe tubes movable out of said front opening into said transfer mechanism;
(h) an opening in the rear walls of said storage tank, adjacent the bottom row of each stack of probe tubes; and
(i) said feed mechanism extending through said rear openings to engage and feed selected ones of said probe tubes to said transfer mechanism.

4,239,190

STRUCTURE FOR COLLECTING EXHAUST GASES FROM A CONVERTER

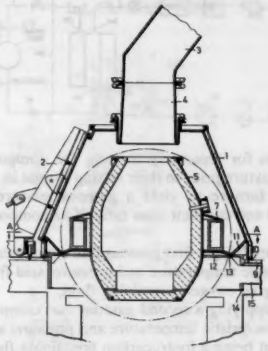
Jörg P. Baum, Essen, Fed. Rep. of Germany, assignor to Verfahrenstechnik Dr. Ing. Kurt Baum, Essen, Fed. Rep. of Germany

Filed May 2, 1979, Ser. No. 35,212

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821379

Int. Cl.³ C21C 5/38

U.S. Cl. 266—158 **8 Claims**



1. A structure including a converter for refining pig iron into steel, said converter includes a vessel normally arranged in an upwardly extending position and having a normally upwardly extending axis, an upper end and a lower end each extending transversely of the axis and the upper end forming an opening, and means for collecting exhaust gases from said converter vessel, said means comprises walls forming a hood-like chamber, said walls comprise a top wall spaced above the opening in the upper end of said converter vessel in the upwardly extending position thereof, said top wall having an opening therein for connection to an exhaust gas line, and side walls extending downwardly from said top wall and spaced outwardly from and extending around said converter vessel, wherein the improvement comprises that said side walls have lower ends located between the upper and lower ends of said converter vessel, said converter includes a support ring secured to said vessel and located outside of and encircling said vessel between the upper and lower ends thereof and said support ring extending substantially normally of the upwardly extending axis of said vessel, and a collar encircling said vessel and attached to said vessel and said support ring, said collar extending substantially normally of the upwardly extending axis of said vessel and projecting radially outwardly from said support ring toward the lower ends of said side walls to bear into a juxtaposed relationship, means for pivotally mounting said support ring within said hood-like chamber about a pivot axis extending transversely of the normally upwardly extending axis of said vessel so that said support ring along with said collar and said vessel can be pivoted about the pivot axis relative to said means forming said hood-like chamber, and the maximum dimension of said support ring, collar and vessel from said pivot axis being such that said support ring, collar and vessel pivot on a turning circle not greater than the inside diameter of the lower ends of said side walls encircling said

support ring and collar, said support ring being located between and spaced from the upper and lower ends of said vessel and the lower ends of said side walls extending downwardly at least to the region of said support ring with said lower ends laterally enclosing said vessel above the lower end of said vessel so that the lower end of said vessel is located below and is accessible from the exterior of said side walls.

4,239,191

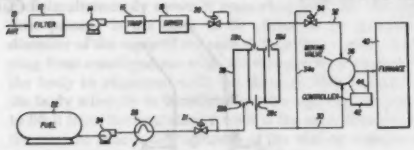
APPARATUS FOR CONTROLLING COMBUSTION IN A METAL MELTING FURNACE

Milton E. Berry, and Ronald L. Pariani, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Division of Ser. No. 879,034, Feb. 21, 1978, Pat. No. 4,211,555. This application Aug. 3, 1979, Ser. No. 63,485

Int. Cl.³ C21D *11/00*

U.S. Cl. 266—200 **9 Claims**



1. Apparatus for separately treating the components of a gaseous fuel mixture prior to their mixing for use in a metallurgical melting furnace to yield a gaseous mixture having a predetermined and constant mass ratio of its component gases, comprising:

means for supplying a first gaseous fuel component having a characteristic temperature and pressure, said first component being an oxygen containing fluid;

means for supplying a second gaseous fuel component having a characteristic temperature and pressure, said second component being a hydrocarbon containing fluid;

means for substantially equalizing the temperatures of said first and second components without intermixing said components;

means for equalizing the pressures of said first and second components without intermixing said components; and

means for mixing said first and second components in a predetermined volume ratio, whereby the resulting gaseous fuel mixture has a predetermined and constant mass ratio of said component gases due to their previously equalized temperature and pressure.

4,239,192

METHOD AND APPARATUS FOR IMPROVING THE EFFICIENCY OF THE DEOXIDATION, DESULFURIZATION AND PURIFICATION OF STEEL IN THE POURING LADLE

Fernand Morival, Avenue Monier, 59178 Hasnon, France

Filed Aug. 28, 1978, Ser. No. 937,325

Claims priority, application France, Sep. 2, 1977, 77 27525

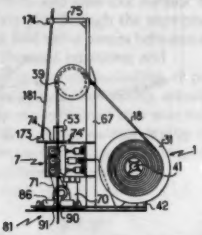
Int. Cl.³ C21C *7/00*

U.S. Cl. 266—216 **19 Claims**

1. Apparatus for improving the efficiency of the deoxidation, desulfurization and purification of molten steel in a pouring ladle, including means for injecting a band of metal into molten steel in a ladle, a supply of bands disposed proximate said injection means, and a drive assembly located above and proximate to the molten steel in the ladle for pulling on a band to direct it downward, maintain it in straight condition and propel it toward the ladle so it enters the surface of the liquid steel perpendicularly, the said drive assembly includng a series of drive rollers on one side of the band and a series of mating rollers on the other side of the band, to grip and drive the band, the mating rollers being mounted on a yoke which can be moved toward and away from the drive rollers by the action of rams, characterized by means to inject a selected quantity of addition products and of a band of metal which is as rectilinear as possible, comprising:

(a) means for precisely metering the length of a band supplied to the molten steel,

(b) receptacles for containing the addition products adapted to be fixed to the lower end of each band, the material



constituting the receptacles being chosen so as to be destroyed only at the moment when the receptacle has reached the bottom of a ladle full of molten steel with the band which pushes it there, and

(c) a trapdoor above the ladle for supporting the receptacles and adapted to open at the moment of the descent of a band with the receptacle which it pushes downward.

4,239,193

CONVERTER BOTTOM FASTENING ARRANGEMENT

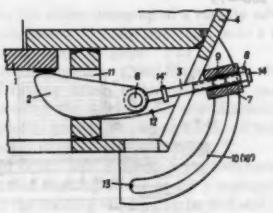
Manfred Eysn, Linz, Austria, and Daniel Meyer, Neuves Maisons, France, assignors to Voest-Alpine Aktiengesellschaft, Austria and Société Sidérurgique Châtillon Neuves Maisons, France

Filed Mar. 22, 1979, Ser. No. 22,824

Claims priority, application Austria, Apr. 5, 1978, 2382/78

Int. Cl.³ C21C *5/42*

U.S. Cl. 266—243 **8 Claims**



1. In a converter bottom fastening arrangement to be used in a converter construction comprising:

a removable converter bottom;

a converter jacket defining a bottom opening to be covered by said removable converter bottom;

a supporting construction connected to said converter jacket;

a plurality of rocker-shaped clamping levers peripherally arranged about said removable converter bottom for securing said removable converter bottom to said converter construction, said plurality of rocker-shaped clamping levers being displaceable into and out of an engagement position with said removable converter bottom and having outer ends facing said converter jacket; and

bracing means being provided for supporting said outer ends with respect to said converter construction, the improvement which is characterized in that

a curved guideway is provided and

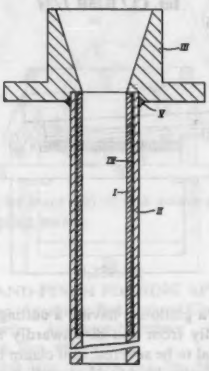
guide means are provided on said bracing means, said bracing means being guided by said guide means along the curved guideway between a vertical bracing position and a released position.

4,239,194

TUYERE FOR THE BOTTOM OF A STEELWORKS CONVERTER

Michel J. Debaise, Mont-sur-Marchienne, Belgium, assignor to Hainaut-Sambre Societe Anonyme, Belgium

Filed Jun. 21, 1979, Ser. No. 50,880
Claims priority, application Belgium, Jun. 23, 1978, 868431
Int. Cl.³ C21B 7/16
U.S. Cl. 266—270 **13 Claims**



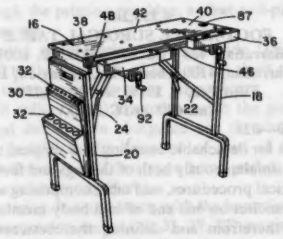
1. A tuyere for the bottom of a steelworks converter, comprising a cylindrical tube, and a convergent duct the narrower end of which is connected to one end of the tube, for introducing a refining fluid into the tube, and an internal sheath of abrasion-resistant material, the sheath being coaxial with the tube and inserted in the internal wall of the tube over a length of 150 to 300 mm extending from the point at which the convergent duct is connected to the tube.

4,239,195

WORKBENCH

John P. Oltman, Cedar Falls, Iowa, and Emerson V. Purkapile, Chicago, Ill., assignors to Waterloo Industries, Inc., Waterloo, Iowa

Filed Jul. 2, 1979, Ser. No. 54,231
Int. Cl.³ B23Q 3/02
U.S. Cl. 269—16 **19 Claims**



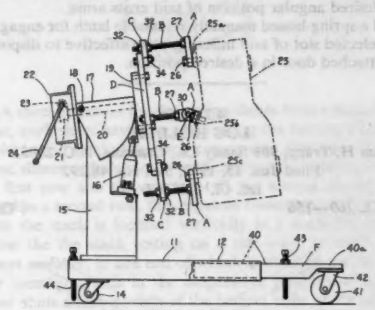
1. An improved workbench comprising, in combination:
(a) a top with a side edge rail;
(b) collapsible legs attached to and supporting the top;
(c) a vise member affixed to the top, said vise member including a gripping jaw in opposed relation to the side rail of the top, said vise member also including means for separately adjusting the spacing of the attached gripping jaw from the side rail; said means for adjusting including three slidably telescoped members, mounted for telescopic movement transversely with respect to the side edge rail; the outside member connected to the gripping jaw, the middle member including adjustable ratchet means for engaging cooperative means attached to the bench and thereby providing means for gross adjustment of the gripping head with respect to the side rail, the inside member including means for simultaneous movement with the outside member with respect to the middle member to thereby provide fine adjustment of the gripping jaw or release of the ratchet means.

4,239,196

ENGINE STAND

James E. Hanger, P.O. Box 16, Panama City, Fla. 32401

Filed May 9, 1979, Ser. No. 37,403
Int. Cl.³ B25B 11/00
U.S. Cl. 269—17 **3 Claims**



1. A motor mounting apparatus for use on an engine stand having a wheeled base with a vertical stand carried thereby and a rotatable upright face plate on said stand comprising:
a plurality of threaded members attachable to said engine;
a plurality of substantially horizontal threaded studs receivable upon said threaded members;
a plurality of transfer bar members attachable to said studs;
a mounting plate attachable to said transfer bar members and to said face plate;
said transfer bar members having elongated slots therein facilitating adjustable positioning of the transfer bars upon said mounting plate;
a vertically disposed hydraulic ram for raising and lowering said face plate, and
forwardly extensible wheeled load leveling elements carried by said base.

4,239,197

APPARATUS FOR SUPPORTING A DOOR DURING PROCESSING

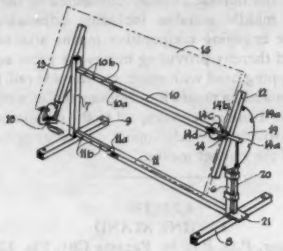
James H. Olstad, 3808 W. Eisenhower Blvd., Loveland, Colo. 80537

Filed Nov. 20, 1979, Ser. No. 96,039
Int. Cl.³ B23Q 3/00
U.S. Cl. 269—68 **8 Claims**

1. Apparatus for supporting a door during processing and applying fixtures thereto prior to installing in a doorway comprising:
a rigid elongated frame including vertical supports at each end thereof;
a pair of lateral door-supporting cross arms individually pivotally connected to said vertical supports;
a first clamp secured to one of said cross arms near its pivotal

connection to one of said vertical supports and manually operable to clamp a door thereto;

a second clamp secured to the outer end of the other of said cross arms and manually operable to clamp a door thereto;



an indexing plate depending from one of said cross arms adjacent its vertical support and including a slot for each desired angular position of said cross arms;

and a spring-biased manually releasable latch for engaging a selected slot of said indexing plate effective to dispose an attached door in a desired position.

4,239,198

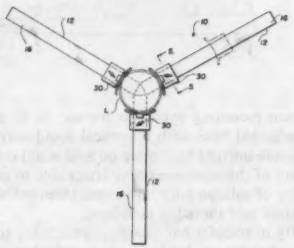
LOG HOLDER

William H. Trupp, 901 Sandy La., Gastonia, N.C. 28052

Filed Jun. 13, 1979, Ser. No. 48,292

Int. Cl.³ B25B *1/24*

U.S. Cl. 269—156 **6 Claims**



1. A log holder for supporting a log in a vertical position comprising base means and a plurality of retainer means slidable on said base means, said retainer means including locking means for adjustably locking said retainer means to the base means and collar means for contacting the log,

said base means including at least three interconnected, horizontally extending supports, each support having a lower planar portion, an upper planar portion and a web interconnecting said lower and said upper planar portions and one of said retainer means being slidably mounted on each of said supports,

said retainer means further including a shoe portion having a T-shaped slot in the lower portion thereof, said T-shaped slot defining a first planar surface and a pair of oppositely projecting legs, said legs spaced from and beneath said upper planar portion of said support and adapted to move up and into frictional engagement with said upper planar portion when said locking means is actuated,

said T-shaped slot extending through the complete lower portion of said shoe portion, said locking means including a first means adapted to be moved into the horizontal opening portion of said T-shaped slot, and against the upper planer portion of said support, whereby the shoe portion is raised to bring said legs of said shoe portion into frictional engagement with said support upper planar portion, said locking means further including a second means affixed to said first means to facilitate the movement of said first means.

4,239,199

CLAMPING APPARATUS FOR A GUILLOTINE TYPE CUTTER

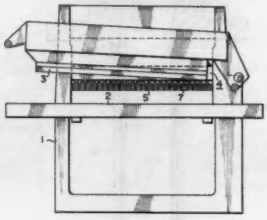
Isamu Miura, 6/16,3, Ryusen, Taito-ku, Tokyo, Japan

Filed Sep. 12, 1978, Ser. No. 941,717

Claims priority, application Japan, Sep. 16, 1977, 52/110532; May 29, 1978, 53/63349

Int. Cl.³ B25B *1/24*

U.S. Cl. 269—266 **3 Claims**



1. A clamp for a guillotine having a cutting blade movable vertically upwardly from and downwardly towards a table supporting material to be severed, said clamp being positioned adjacent said guillotine blade and extending along said blade for contact with the material to be cut and for pressing the material against the table during cutting operation, the improvement wherein said clamp comprises:

a plurality of adjacent, aligned partial presser feet defining individual clamping surfaces for pressing the cutting material,

means for independently displacing the partial presser feet in a direction away from said table in accordance to the reaction force generated during pressing of the cutting material against the table,

and said clamp further comprising a connecting piece for connecting any pair of adjoining partial presser feet to cause said adjacent, adjoining partial presser feet to be displaceable as a unit.

4,239,200

FOOT-ANKLE SURGICAL TABLE

Shahan K. Sarrafian, 4343 Davis, Skokie, Ill. 60076, and Vahram K. Sarrafian, 4100 Chester Dr., Glenview, Ill. 60025

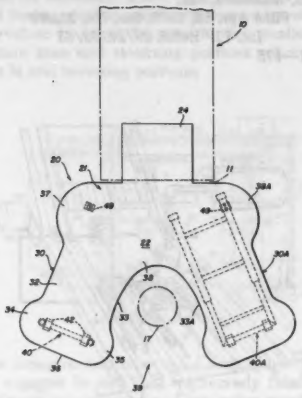
Filed Feb. 5, 1979, Ser. No. 9,259

Int. Cl.³ A61G *13/00*

U.S. Cl. 269—328 **16 Claims**

1. A table for detachable coupling to a surgical table and for supporting simultaneously both of the legs and feet of a patient during surgical procedures, said table comprising a body member, two branches on one end of said body member diverging outwardly therefrom and defining therebetween an access space for accommodating a surgeon, each of said branches having an upper surface dimensioned for receiving a corresponding one of a patient's fully-extended legs and feet thereon, and coupling means extending from the other end of said body member opposite said branches for detachably coupling said body member to the associated surgical table, each of said branches having a length as measured from the outer

end thereof to the inner end of said access space which is substantially greater than the length of said body member is



measured from the inner end of said access space to the inner end of said coupling means.

4,239,201

PLEAT-AND-PINCH FOLDING APPARATUS

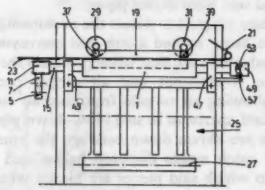
Johannes Richter, Augsburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Mar. 2, 1979, Ser. No. 16,989

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815077

Int. Cl.³ B65H *45/18*

U.S. Cl. 493—444 9 Claims



1. For use with a rotary printing press to form a paper sheet, or stack of paper sheets (23) with a fold line extending longitudinally in a direction of transport feed of the sheet, or stack of sheets through the printing machine, a pleat-and-pinch folding apparatus having

an elongated reciprocating pleating blade (19) positioned parallel to the direction of feed of the sheet and reciprocating transverse to its major dimension;

two pinch rollers (1, 3) located beneath the pleating blade (19) and defining an elongated nip therebetween positioned parallel to the direction of feed of the sheet to receive the sheet or sheets upon being pushed into the nip by the reciprocating blade,

and comprising, in accordance with the invention, a pleating blade suspension means (29, 31, 37, 39) moving the pleating blade (19) in a longitudinal direction parallel to its length during reciprocating movement of the blade; and

roller moving means (41, 43, 45, 47, 15, 17, 49, 51) for moving the pinch rollers axially in a longitudinal direction parallel to the feed direction, wherein the longitudinal movement of both the pleating blade and pinch rollers is effected simultaneously with the sheet or sheets being pushed by said blade into said nip for folding the sheet or sheets.

4,239,202

SHEET DISPENSER

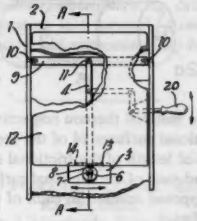
George F. A. M. Turner, Ingatestone, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Mar. 16, 1978, Ser. No. 887,270

Claims priority, application United Kingdom, Mar. 23, 1977, 12180/77

Int. Cl.³ B65H *3/00*

U.S. Cl. 271—18 4 Claims



1. A sheet dispenser for dispensing sheets from a stack one at a time, each sheet having a notch along the bottom edge as it is held in the stack, the stack comprising alternate first and second sheets with the notch in all the first sheets being aligned in a first row and the notch in all the second sheets being aligned in a second row, the dispenser comprising a housing in which the stack is inclined vertically in a stack holder, the bottom the the stack resting on a side-ways movable stack support member, to one end of which is attached a sheet separator member which in the inoperative position of the dispenser abuts a face-portion of the bottom edge of the topmost sheet of the stack thus keeping the stack in the holder, the abutted portion of the sheet being smaller than any notch in the sheets of the stack, said stack support member being mounted on one end of a pendulum which is positioned on the opposite side of the stack holder to that side which supports the film stack, the said pendulum being pivotally mounted so that the sheet separator member, which is mounted on the stack support member which is in its turn mounted on the pendulum, is caused to abut the film stack; together with means to move the stack support member across and beneath the sheet stack so that the sheet separator member is stopped at the notch position in the topmost sheet thus abutting the next-to-topmost sheet so enabling the topmost sheet to fall by gravity from the stack over the sheet separator member and means to move the stack support member in the opposite direction which causes the topmost sheet to separate from the stack if it has not already separated, the said stack support member being so mounted in relation to the stack holder that the sheet separator member always abuts either the topmost sheet in the stack or the next-to-topmost sheet through the notch in the topmost sheet.

4,239,203

PAPER DELIVERY ROLLER SYSTEM

Isamu Uchida, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1977, Ser. No. 859,081

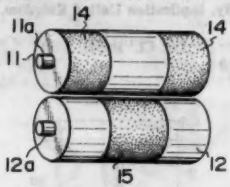
Claims priority, application Japan, Dec. 10, 1976, 51/165733[U]

Int. Cl.³ B65H *3/52*

U.S. Cl. 271—122 1 Claim

1. A paper delivery roller system comprising a feed roller 11 and return roller 12 of identical axial length disposed in a delivery zone so as to form a gap therebetween, said rollers 11 and 12 being rotated in the same direction so that frictional

forces acting in reverse directions are given to the upper and lower faces of the outermost sheet in a stack of sheets of paper stored in a store zone whereby the sheets of paper stored in the store zone are delivered one by one into the gap between said rollers 11 and 12, said paper delivery roller system being characterized by said rollers 11 and 12 having frictional surfaces 14



and 15 of the same material thereon respectively and the axial length of the frictional surfaces 14 of the feed roller 11 being larger than the axial length of the frictional surfaces 15 of the return roller 12 and each of the frictional surfaces of one of the rollers being in opposed relation to each of the non-frictional surfaces of the other.

4,239,204

CONSTRUCTION OF A COUNTING SECTION IN A PAPER COUNTING MACHINE

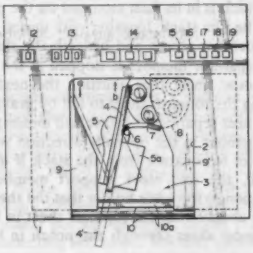
Tuyoshi Miyagawa, and Junichi Arikawa, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1979, Ser. No. 31,129

Claims priority, application Japan, Apr. 25, 1978, 53-56341[U]

Int. Cl.³ B65H *1/02*

U.S. Cl. 271—171 **5 Claims**



1. A paper counting machine wherein a stack of papers charged on a holder is sucked and deflected one sheet at a time by a number of suction shafts to be counter, characterized in that a counting section including the holder and the suction shafts is disposed within a recess formed on the top of the body of the machine, noise-proof covers are openably mounted on the body above the recess to seal or release the counting section, and an upper edge of the body in front of the recess is constructed to be in substantially a same horizontal plane as the upper surface of the supporting plate of the holder whereby when the larger size of the papers is charged on the supporting plate with the covers being opened, the portions of the lower edges of the larger size papers are supported on the upper edge of the body.

4,239,205

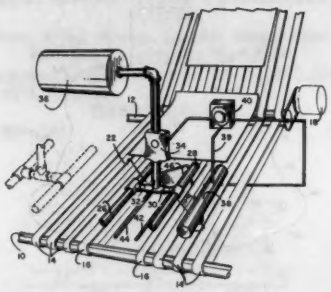
SMALL PIECE STACKER AND COUNTER

Michel Bourque, North Berwick, Me., assignor to B. B. & D. Associates, Biddeford, Me.

Filed Apr. 16, 1979, Ser. No. 30,099

Int. Cl.³ B65H *29/24, 33/08*

U.S. Cl. 271—175 **4 Claims**



1. A small laundry piece stacker and counter for use in association with laundry ironing machines comprising:

conveyor belt means having a space defined between an inner pair of said conveyor belts, said space being a distance less than the width of said piece;

a stationary blow-down member including elongated first and second blow-down pipes arrayed parallel to one another in a plane above said area between said inner conveyor belts aligned with the movement of the pieces, said first and second blow-down pipes each having a plurality of apertures defined at the bottom thereof;

air supply means adapted to blow air through said apertures in said blow-down pipes;

air supply control means interposed between said air supply means and said blow-down pipes;

detector means adapted to detect the positioning thereunder of a piece being moved along said conveyor belts, said detector adapted such that when it detects the presence of said piece, it activates said air supply control means thereby allowing air to pass from said air supply means through said apertures in said blow-down pipes whereby the pieces are blown down between the inner conveyor belts and catch means disposed below said blow-down pipes onto which said pieces are blown when air passes through said blown-down pipe aperatures, said first blow-down pipe being situated to one side of said catch means and said second blow-down pipe being situated to the other side of said catch means.

4,239,206

SHEET FEEDING APPARATUS

Masaharu Matsuo, No. 17-3, Higashi Komagata 3-chome, Sumida-ku, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,539

Claims priority, application Japan, Feb. 27, 1978, 53-20888; Feb. 27, 1978, 53-20889; Mar. 1, 1978, 53-22039

Int. Cl.³ B65H *5/16, 9/04*

U.S. Cl. 271—271 **7 Claims**

1. Sheet feeding apparatus comprising:

(a) a support defining a plane of sheet movement;

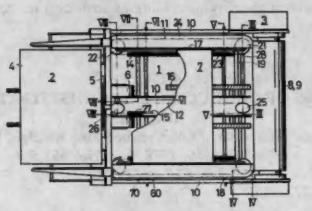
(b) an elongated conveying member extending in a closed loop;

(c) drive means on said support for moving said member in a path having two reversing portions arcuate about respective axes of curvature, a feeding portion substantially straight and parallel to said plane, and a return portion,

(1) said axes intersecting said plane,

(2) said feeding and return portions connecting said reversing portions;

(d) a sheet engaging dog fastened to a part of said conveying member for movement in said plane while said part moves in said feeding portion and for movement about said axes of curvature in respective arcs having smaller radii of curvature than said reversing portions when said part moves in said reversing portions;



(e) guide means on said support for limiting movement of a sheet engaged by said dog transversely relative to the direction of movement of said conveying member in said feeding portion, said guide means having a face elongated in said direction and transverse to said plane, adjusting means for moving said face transversely relative to said direction, and said drive means are secured to said guide means for movement of said feeding and reversing portions with said face.

4,239,207

DEVICE FOR DRIVING A SIMULATED FLYING OBJECT

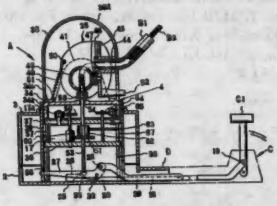
Toyotsugu Ogasawara, Tateishi, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1978, Ser. No. 965,431

Claims priority, application Japan, Dec. 3, 1977, 52/162295[U]

Int. Cl.³ A63H *27/04*

U.S. Cl. 272—31 A 9 Claims



1. A device for driving a simulated flying object comprising a housing, an upwardly extending shaft mounted in said housing and extending outwardly from said housing in the upward direction, said shaft being displaceable in the axial direction thereof and movable relative to said housing, a rotary structure mounted on said housing and arranged to rotate around the axis of said shaft, said rotary structure comprising a turntable extending transversely of said shaft with said shaft extending through said turntable, a swingable support mounted on and extending upwardly from said turntable, said swingable support arranged to pivot about an axis extending transversely of said shaft, an elongated supporting arm secured at one end to said swingable support and extending outwardly thereform transversely of the axis of said shaft, said arm having an axis extending in the elongated direction thereof, said flying object being secured to the other end of said supporting arm spaced outwardly from said swingable support, an electric motor mounted in said housing, gear means driven by said electric motor for rotating said shaft for rotating said turntable around said shaft and for selectively rotating said support arm about the axis of said arm, means mounted on said housing for movement in the upward direction relative to said housing for engagement with said swingable support for pivoting said swingable support about the axis thereof so that said supporting arm secured thereto can be swung in an arc in an upwardly extending plane extending transversely of the pivot axis of said swingable support, manually operable control means for controlling the movement of said flying object comprising a first handle lever arranged to actuate said electric motor and for axially displacing said shaft for selectively engaging said gear means for rotating said support arm about the axis of said arm, and said gear means includes first gears for driving said shaft, second gears for rotating said turntable from said shaft and third gears for rotating said supporting arm from said shaft.

4,239,208

WRIST AND FOREARM CONDITIONER AND EXERCISER

Billy D. Walls, Box J, Mondamin, Iowa 51557

Filed Sep. 27, 1978, Ser. No. 946,120

Int. Cl.³ A63B *21/00*

U.S. Cl. 272—67 13 Claims

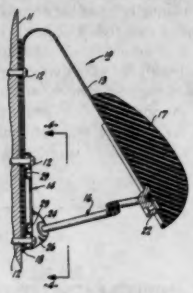
1. A wrist and forearm conditioner and exerciser comprising a frame, a handle carrier rotatably mounted on said frame for rotation about an axis, a handle, means mounting said handle on said carrier, said handle being adapted to be gripped by an operator's hand and twisted for rotating said carrier, resilient means mounted on said frame, means interconnecting said carrier and said resilient means whereby when said handle is twisted and said carrier is rotated then said resilient means becomes increasingly tensioned as said carrier is increasingly rotated, said handle being sufficiently similar to a tennis racquet handle that said handle has such a size and shape that the average man when gripping said handle with one hand can have the majority of the length of his fingers and also a portion of the palm of his hand in engagement with and applying pressure on said handle at one time, said resilient means being of a strength providing sufficient resistance to handle rotation that substantial wrist and forearm exercise is provided for a person as he rotates said handle, said substantial exercise being measurable as being an amount reasonably to be expected to be useful in an exerciser to be repeatedly used for strengthening a person's wrist and forearm for such activities as golf, tennis and hand-ball, said frame having holes through a portion thereof, said holes extending substantially parallel to said axis for assisting the mounting of said frame on a vertical wall, said frame enclosing said resilient means at times of use, said frame having a forward side, a rearward side, and right and left sides, and top and bottom sides, said handle permanently extending forwardly from said forward side of said frame.

4,239,209

PUNCHING BAG SIMULATOR

Donald B. Curchod, Saratoga, Calif., assignor to American Fitness, Inc., Woodside, Calif.

Filed Nov. 24, 1978, Ser. No. 963,342
Int. Cl.³ A63B 69/24
U.S. Cl. 272—76 2 Claims



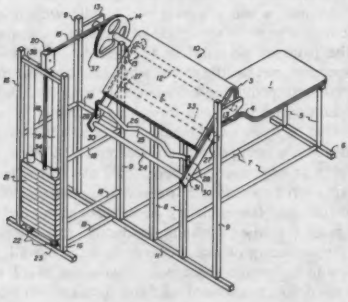
1. An exercise device for simulating the action of a punching bag of a type normally hung from above to be hit to move in various directions in response thereto comprising a resilient generally V-shaped body member having diverging arms including a support arm for mounting the device upon an upright surface in an inverted Vee position, and a reciprocating arm movable between advanced and retracted positions with respect to said support arm to a degree simulating the movement of a speed bag, a compressible target pad mounted on said reciprocating arm adjacent to its free end, the arms of said body member being joined by a resilient hinge portion, said hinge portion being twistable to permit the reciprocating arm to be deflected laterally with respect to said support arm, and elastic means serving to restrain and control the rebound movement of said reciprocating arm, the last named means being connected between the free end of said arm and a stationary anchor point, said hinge portion permitting deflecting and twisting movements of said reciprocating arm so that the target pad may be struck from side-to-side by the fists in simulating the action of a speed bag.

4,239,210

ARM CURL MACHINE

Lloyd J. Lambert, Jr., c/o Dynamics Health Equipment Manuf. Co., Inc. 1538 College Ave., South Houston, Tex. 77587

Filed Jan. 31, 1979, Ser. No. 7,966
Int. Cl.³ A63B 21/06
U.S. Cl. 272—118 9 Claims



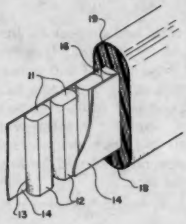
1. An arm curl machine comprising, in combination, a frame, a seat for an exerciser connected to said frame, a weight cage on said frame, weight means disposed in said weight cage for vertical movement between a rest position and an elevated position, stop means on said frame, hand grip means pivotally mounted on said frame for pivotal movement upwardly by said exerciser from a stop position defined by said stop means and drive means operatively connected to said hand grip means for moving said weight means from said rest position corresponding to the stop position of said hand grip means into said elevated position thereby providing an arm curl exercise for said exerciser.

4,239,211

PROCESS OF PRODUCING A WEIGHTED EXERCISING DEVICE

C. William Wilkerson, 7709 Audubon Dr., Raleigh, N.C. 27609

Filed Oct. 16, 1978, Ser. No. 951,504
Int. Cl.³ A63B 21/12
U.S. Cl. 272—119 5 Claims



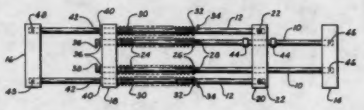
1. The process of producing a weighted device comprising: bonding a plurality of elongated weight means in spaced relationship to a web means to form a weighted web; bonding a strap means to one end of said weighted web; and permanently encapsulating said weighted web within a pliable, closed cell material whereby an improved weighted device is produced.

4,239,212

PUSH-PULL EXERCISE DEVICE

Donald D. Hickey, 317B Hayden St., Sayre, Pa. 18840

Filed May 3, 1979, Ser. No. 35,638
Int. Cl.³ A63B 21/02
U.S. Cl. 272—141 9 Claims



1. An exercise device comprising: first and second pairs of parallel rods having inner overlapping ends and outer projecting ends, said second pair of rods straddling said first pair of rods, a first transverse abutment member on the inner ends of said first pair of rods and slidably receiving said second pair of rods, a second transverse member connecting the inner ends of said second pair of rods and slidably receiving said first pair of rods, a first pair of coil springs respective ones of which are telescoped over respective ones of said first pair of rods with the ends of the springs that are adjacent said first transverse member being positioned to receive compressive force from said first transverse member, first retainers fixed to said first pair of rods for opposing compressive force from the other end of said springs, a second pair of coil springs respective ones of which are telescoped over respective ones of said second pair of rods with the ends of the springs that are adjacent said first transverse member being positioned to receive compressive

force from said first transverse member, second retainers positioned on said second pair of rods for opposing compressive force from the other end of said springs, third retainers for preventing said first pair of rods from being pulled out of said first transverse member, fourth retainers limiting movement of said first transverse member outwardly of said second pair of rods, and handles on the outer ends of said first and second pairs of rods, and whereby both pushing and pulling of said handles are opposed by compressive action of one or more of the springs.

4,239,213

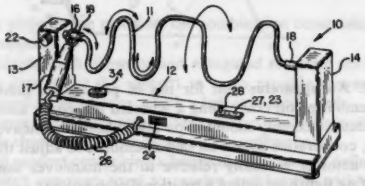
STEADINESS TESTING GAME

Arthur B. Jarvis, 46 Alexander Ave., San Rafael, Calif. 94901

Filed May 4, 1979, Ser. No. 35,831

Int. Cl.³ A63F 9/00

U.S. Cl. 273—1 E **2 Claims**



2. A steadiness testing game, comprising:

a base;

a convoluted electrically conductive track member having ends connected into the base;

pivotal mounting means providing for rotary adjustment of the position of the conductive track on the base along a generally horizontal axis and comprising, at one end of the conductive track, a conductive sleeve mounted in the base, with the conductive track having a generally cylindrical end closely fitted in the sleeve;

an electrically conductive ring positioned circumjacent the electrically conductive track member, have a clearance over the track member and adapted to be moved over the track member from one end to the other;

a handle attached to the conductive ring, permitting manipulation of the ring by a user;

a signal device connected to a power source; and

an electrical circuit connecting the conductive sleeve and track member, the conductive ring, and the signal device and power source such that contact of the ring with the track member closes the circuit and activates the power source;

whereby the steadiness of the user is tested as he attempts to move the ring over the track member avoiding contact of the two conductive members, which will cause the signal device to be activated.

4,239,214

BASKETBALL SHOT MAKING GAME WITH A MULTIPLICITY OF BACKBOARD AND HOOP ARRANGEMENTS

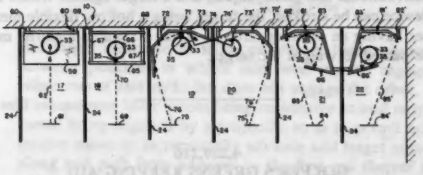
Reeve R. Brenner, 1356 E. 8th St., Brooklyn, N.Y. 11230

Filed Nov. 15, 1978, Ser. No. 960,964

Int. Cl.³ A63B 63/08, 71/02

U.S. Cl. 273—1.5 R **14 Claims**

1. In a basketball shot making game comprising a court surface and a plurality of spaced apart backboards disposed above said court surface, each of said backboards being associated with a basket hoop adapted to receive a shot basketball caromed thereinto off said associated backboard; the improvement comprising a first predetermined angulated relationship for one of said backboards, said one backboard comprising a first plurality of carom surfaces with said one backboard being supported above said court surface with said associated basket hoop being disposed in a plane substantially parallel to the plane of said court surface, said first plurality of carom surfaces including at least one carom surface disposed in a plane angled with respect to a plane normal to the plane of said associated basket hoop, said first plurality of carom surfaces defining said first predetermined angulated relationship, said first predetermined angulated relationship defining a first associated carom flight path for depositing said shot basketball into said basket hoop associated therewith; and a second predetermined angulated relationship for a different one of said backboards, said different one of said backboards comprising a second plurality of carom surfaces with said different one backboard being supported above said court surface with said associated basket hoop being disposed in a plane substantially parallel to the plane of said court surface, said second plurality of carom surfaces including at least one carom surface disposed in a plane angled with respect to both a plane normal to the plane of said associated basket hoop and a plane parallel to the plane of said associated basket hoop, said second plurality of carom surfaces defining said predtermined angulated relationship,



said second predetermined angulated relationship being different from said first predetermined angulated relationship and defining a second associated carom flight path for depositing said shot basketball into said basket hoop associated therewith, said first and second associated carom flight paths being different, said first carom flight path intercepting the flight of said shot basketball and requiring said intercepted shot basketball to travel along a substantially horizontal trajectory with respect to said associated basket hoop between said one carom surface and said associated basket hoop in order to ultimately deposit said shot basketball into said associated basket hoop, said second carom flight path intercepting the flight of said shot basketball and requiring said intercepted shot basketball to travel along a substantially vertical trajectory with respect to said associated basket hoop between said one carom surface and said basket hoop in order to ultimately deposit said shot basketball into said associated basket hoop, said plurality of backboards being arrayed above said court surface in a course defined by a plurality of shot making stations with one of said backboards being disposed at each of said shot making stations, whereby a different shot making carom strategy is required at each of said stations.

4,239,215

DEVICES FOR PRACTISING BALL-GAME STROKE PLAY

Eric Farr, Newburgh, Scotland, assignor to Tecsports of Oxford Limited, Great Britain

Continuation of Ser. No. 773,319, Mar. 1, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,608

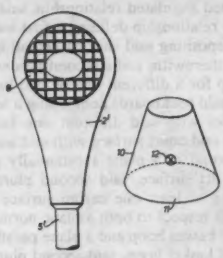
Claims priority, application United Kingdom, Mar. 4, 1976, 8804/76; Jul. 8, 1976, 28457/76

Int. Cl.³ A63B 61/00

U.S. Cl. 273—29 A **3 Claims**

1. Apparatus for simulating and practising ball-game stroke play comprising a device for simulating and practicing ball-game stroke play, the device comprising a handle portion and a head portion; wherein the device has an overall length, a weight, and a weight distribution each of which is similar to that of a conventional ball-game racquet which the device is

arranged to simulate; and wherein the head portion comprises a solid mass of resiliently flexible material, the device being such that when held by its handle portion and its head portion is stroked against a weighted target and head portion is resiliently displaced relative to the handle portion producing a



sensation, for the user, similar to that of striking a ball with the conventional ball-game raquet; and a target against which the device can be stroked, the target being a hollow flexible member having an opening through which a suitable material may be passed to weight the target.

4,239,216

GOLFER'S GREENS KEEPING AID

Frank L. Bauer, 903 Valmont Ct., Wyomissing, Pa. 19610

Filed Dec. 7, 1978, Ser. No. 967,299
Int. Cl.[3] A63B *57/00*
U.S. Cl. 273—32 B 7 Claims

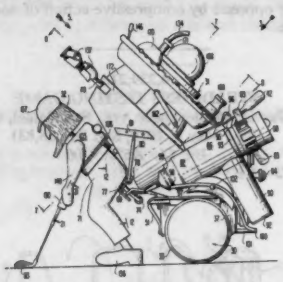
1. A golfer's aid comprising:
(a) a casing having a central axial bore and a lower end adapted to be received in the shaft of a golf club, the upper end of said casing having an annular groove encircling said central axial bore;
(b) an elongated symmetrical tool nestable within the bore of said casing for storage and removable therefrom for repairing dents in the green;
(c) a token carrier connected to said tool and providing a handle grip thereon, and connected to an annular skirt symmetrically spaced from the elongated tool and adapted to enter said groove; and
(d) means for latching said tool in the casing.

4,239,217

TABLE TOP GOLF GAME APPARATUS

Omar M. Thieme, and Ruby M. Thieme, both of 403 Vancil St., South Fulton, Tenn. 42041

Filed Jul. 9, 1979, Ser. No. 55,972
Int. Cl.[3] A63F *7/06*
U.S. Cl. 273—87.4 26 Claims



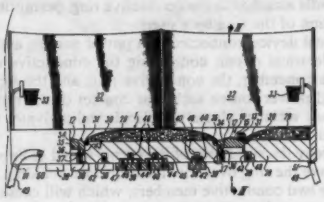
1. An apparatus unit for use in playing an indoor game resembling golf comprising a wheeled maneuver assembly, an actuator assembly mounted on said wheeled maneuver assembly, cooperative means on said assemblies to adjust the yaw of the actuator assembly relative to the maneuver assembly, a golfing figure including a rotational club holding section and a base section, cooperative means on said maneuver assembly and golfing figure base section to releasably couple the golfing figure to the maneuver assembly, cooperative rotational drive means on the actuator assembly and golfing figure rotational section, and manually operated means on the actuator assembly to activate said rotational drive means.

4,239,218

BASKETBALL TABLE GAME

Andreas Kreuzer, Rossbergstrasse 53, D-7022 Leinfelden-Echterdingen, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,620
Int. Cl.[3] A63F *7/06, 7/24*
U.S. Cl. 273—85 E 15 Claims



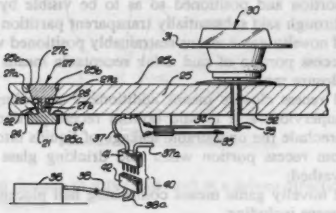
1. A basketball table game comprising:
(a) a playing field in a generally horizontal plane, said playing field having an upper surface and opposite ends;
(b) a basket goal at each said end;
(c) said upper surface of said playing field including a plurality of depressions, said depressions providing unevenness in the playing field in the vertical direction, whereby a ball placed upon the playing field always rolls into a depression;
(d) a basketball ejector in each depression, each of said ejectors including recesses for receiving a ball in a precise position; and
(e) means for abruptly displacing each said ejector in the upward direction to produce a throwing motion and for rotating each said ejector to selectively determine the direction in which the ball is thrown by the abrupt upward displacement of the ejector.

4,239,219

PINBALL APPARATUS WITH REPLACEABLE MODULAR BARRIER SUPPORTS

Robert W. Haefliger, 1872 Alpine Dr., San Marino, Calif. 91108

Filed Mar. 26, 1979, Ser. No. 23,596
Int. Cl.[2] A63D 3/02
U.S. Cl. 273—121 A 7 Claims



1. In a pinball type machine, the combination comprising
(a) a support,
(b) multiple deck elements and elongated retainers removably carried by the support so as to provide upwardly exposed surfaces over which a ball is rollable, and
(c) separate structures respectively carried on multiple of the deck elements to be engaged by the rolling ball,
(d) said support comprising a lattice like framework defining upward openings sized to receive and interfit with said deck elements,
(e) each said structure including a part projecting upwardly of a deck element and deflectible by the ball rolling on the upwardly exposed surface of said deck element, and an electrical switch located entirely beneath the deck element, said part operatively connected to the switch such that the switch is operated in response to deflection of said part, there being counter circuitry connected with said switch via a releasable electrical connection which is established in conjunction with placing the deck element onto the support,
(f) each such part confined by the vertical boundaries of a single one of said deck elements and being entirely free of connection to others of said parts above said deck elements.

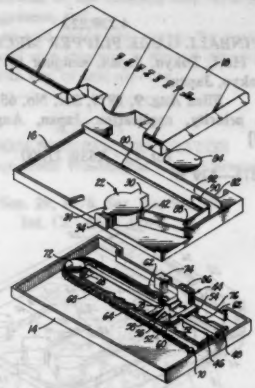
4,239,220

TARGET GAME AND COMPONENTS THEREOF

Toshiaki Kurita, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Sep. 27, 1978, Ser. No. 946,202
Claims priority, application Japan, Sep. 28, 1977, 52-130276
Int. Cl.[3] F41J 7/00
U.S. Cl. 273—127 R 2 Claims

1. A target apparatus which includes
a support member, target means movably supported on said support member so as to be capable of being moved along a path in which the improvement comprises:
motive means connected to said target means for moving said target means along said path from adjacent to a first end thereof to adjacent to a second end thereof,
escapement means having a ratchet means and a pivotally mounted escapement lever means for controlling the motion of said target means along said path from adjacent to the first end thereof to adjacent to the second end thereof,
said ratchet means being mounted on said support and said escapement lever means being movably mounted on said target means,
said ratchet means including two ratchet racks, each of which is located parallel to said path, one of said racks being located so that the vertical walls of its teeth face toward said first end, the other of said racks having teeth shaped so as to pivot said escapement lever means into engagement with the first of said racks,
said escapement lever means being pivotally mounted on



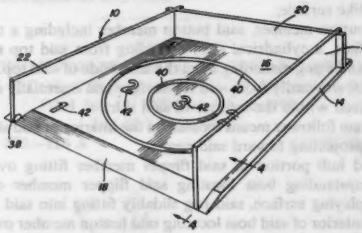
said target means so as to be capable of being pivoted between positions in which said lever means engages either one of said racks but does not engage the other,
said escapement lever means being responsive to said target means being engaged by a projectile so as to permit said motive means to incrementally advance said target means along said path from adjacent to the first end thereof to adjacent to the second end thereof in successive increments each time said target means is engaged by a projectile.

4,239,221

GAME DEVICE

Albert N. Griffin, 1321 Stagecoach Rd. SE., Albuquerque, N. Mex. 87123

Filed Jan. 23, 1979, Ser. No. 5,901
Int. Cl.[3] A63B 71/06
U.S. Cl. 273—127 R 6 Claims



1. A game device comprising a target in the form of a box-like structure having one open side with an inclined ramp surface along the open side and a target area inwardly of the open side and cubical bodies rollable toward the target for positioning on the target area, said target area including concentrically defined areas with scoring indicia thereon, each cubical body including six flat surfaces with scoring indicia thereon cooperating with the scoring indicia on the target areas to score points to play various games, said target including a bottom panel with the ramp formed along one edge thereof by bevelling the edge of the panel, a pair of parallel upstanding side fences attached to the bottom panel and an end fence attached to the bottom panel in parallel relation to the ramp and at the opposite edge of the bottom panel, means detachably connecting each of the fences to the bottom panel and means detachably interconnecting each end of the end

fence to an adjacent end of a side fence, the bottom edge of each side fence including a downwardly slanted end portion conforming with and engaging the ramp.

4,239,222

PINBALL GAME FLIPPER MECHANISM

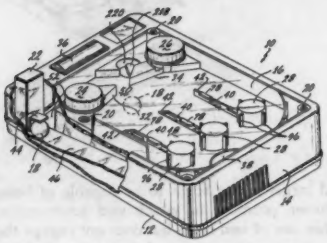
Noritoshi Hori, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,214

Claims priority, application Japan, Aug. 11, 1978, 53-110674[U]

Int. Cl.³ A63B 71/00

U.S. Cl. 273—129 W **4 Claims**



1. A flipper mechanism for use with a pinball game having a playing surface and at least one object which is propelled by said flipper mechanism across said playing surface which comprises:

said playing surface including at least one upstanding boss projecting upwardly from said surface, said boss including a hollow interior;

a flipper member having a hub section and a finger section, said finger section including a striking surface for contacting and accelerating said object across said playing surface, said hub portion including a bearing means fitting over and rotating about said upstanding boss on said playing surface, at least a portion of said hub portion having a generally cylindrical-like surface which includes a spirally inclined cam means integrally formed on said cylindrical-like surface;

a button member, said button member including a top surface, a cylindrical skirt extending from said top surface, and a peg extending from the underside of said top surface downwardly from said top surface and essentially centralized within the interior of said skirt;

a cam follower means located on the interior of said skirt and projecting toward said peg;

said hub portion of said flipper member fitting over said upstanding boss locating said flipper member on said playing surface, said peg slidably fitting into said hollow interior of said boss locating said button member over said flipper member and positioning said cam follower means in operative association with said spirally inclined cam means such that when said button member is depressed toward said playing surface said cam follower means slides against said spirally inclined cam means rotating said flipper member about said upstanding boss.

4,239,223

NOVELTY GAME DRINKING GLASS

Michael C. Wilson, 735 Forest Ave., Glen Ellyn, Ill. 60137

Filed Jan. 20, 1978, Ser. No. 870,948

Int. Cl.³ A63F 5/02

U.S. Cl. 273—138 R **12 Claims**

1. A novelty game drinking glass device for containing beverages as well as entertaining, amusing and interesting a user, said device comprising:

drink receptacle means having integrally formed and substantially transparent partition means,

said partition means being positioned upwardly from the bottom end of said drink receptacle means to form a bottom recess portion at said bottom end,

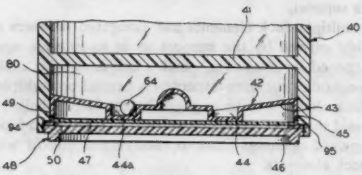
said partition means segregating said contained beverage from said bottom recess portion,

novelty game means positioned within said bottom recess portion and positioned so as to be visible by said user through said substantially transparent partition means,

said novelty game means restrainably positioned within said recess portion of said drink receptacle means by recess closure means,

said recess closure means additionally providing a liquid impervious seal to said bottom recess portion so as to preclude the undesirable leakage of liquids into said bottom recess portion when said drinking glass device is washed;

said novelty game means comprising ball placement game means including



moveable ball means within said recess portion,

ball field means positioned substantially on top of said recess closure means which support said moveable ball means,

said ball field means comprising a transparent elevated sculptured element having planar surface portions on which said ball may move and crevice portions into which said ball may fall as a result of movement imparted to the ball by the user, at least one indicia associated with said sculptured element, said indicia further being associated with a planar surface portion, or with a crevice portion which the user may desire or not desire said ball to be deposited therein,

said indicia being embodied by graphic card means having means cooperating with said sculptured element for alignment of said indicia with said planar surface portions and said crevices of said sculptured element and positioned under said sculptured element,

all of said indicia on said graphic card means being wholly visible through said sculptured element and in turn said substantially transparent partition means.

4,239,224

DRIVE AND INDEXING MECHANISM FOR A ROTATABLE DRUM CHANCE DEVICE

Louis Stanley, Beverly Hills, Australia, assignor to Galexie Manufacturing Pty. Ltd., Sydney, Australia

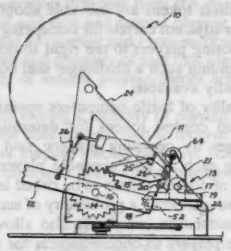
Filed Mar. 23, 1978, Ser. No. 889,592

Int. Cl.³ A63F 5/04

U.S. Cl. 273—143 R **23 Claims**

4. A drive mechanism comprising: a drive lever mounted intermediate its ends on a shaft for pivotal movement about the axis of the shaft enabling movement on the end of the lever in a driving direction along a predetermined path; a driven shaft; driven means mounted on said driven shaft and engageable with said end of said lever so that upon rotation thereof in said driving direction rotation of said lever causes rotation of said driven shaft, said driven means including a stop member fixed to said driven shaft, a movable member rotatably mounted on said shaft and engageable with said stop member to limit rotation of said movable member about said shaft between a driven

first angular position and a non-driven second angular position, said movable member being rotatable by said end of the lever



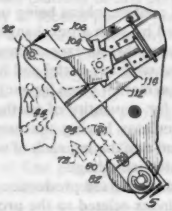
to be moved thereby to drive said shaft in a driven direction by said stop member.

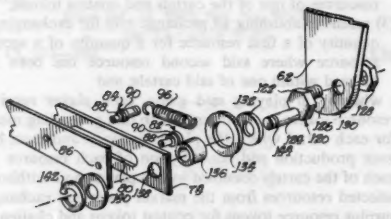
4,239,225

ROTATABLE DISC STOP APPARATUS

Walter M. Burnside, Waukegan, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,353
Int. Cl.³ A63F 5/04
U.S. Cl. 273—143 R **13 Claims**





1. Apparatus for stopping a rotating reel of the type that is used in an amusement or game device and which has an associated circular disc with a plurality of recessed notches positioned along the circumference thereof, said notches being adapted to receive a stop member for stopping rotation of the disc and reel, said apparatus comprising:

an elongated index arm means having attachment means at a first end portion for pivotally attaching the index arm means to a stationary support and having a stop member at the opposite second end portion thereof for engagement with one of the notches when said index arm means is pivoted toward said disc, said index arm means comprising two members that are slideable relative to one another from a first unextended position to a second extended position and means interconnecting said two members for biasing the same toward said unextended position, one of said members carrying said stop member, the other member having said attachment means associated therewith, said members moving from said first position toward said second position in opposition to the resistance of said biasing means responsive to said stop member engaging one of said notches of the rotating disc to cushion the shock of engagement; and,

means attached to said index arm means for pivoting the same so that said stop member is moved into and out of engagement with one of said notches.

4,239,226

RANDOM NUMBER GENERATOR

E. Frederick Palmer, 6905 Washington Ave., University City, Mo. 63130

Filed Sep. 29, 1978, Ser. No. 946,953
Int. Cl.³ A63F 9/04
U.S. Cl. 273—146 **5 Claims**

1. A ten-sided die, having a center axis through the apexes of two regular five-sided identical pyramids, each with flat, planar faces and a planar base, joined base to base and rotated 36° with respect to one another, the equatorial plane defined by said bases being perpendicular to said axis, said plane being bounded by a circle with said axis as a center, said circle having a radius no greater than that of a circle tangent to the projection, on an extension of said plane, of the flat faces of said pyramids, the outer surface of said die immediately contiguous the said plane being formed by a convex surface of revolution of an arc of finite radius, symmetrical with respect to the plane, about said axis, whereby the boundary of each face along the said outer surface is arcuate, the dimension of said die along said center axis being no less than the diameter of said circle, and indicia on said faces.

4,239,227

ATHLETIC SWING TRAINING DEVICE AND METHOD

Leighton I. Davis, 729 Stagecoach SE., Albuquerque, N. Mex.

Filed Jul. 12, 1979, Ser. No. 56,945
Int. Cl.³ A63B 69/36
U.S. Cl. 273—186 A **54 Claims**

1. In an athletic swing timing training device including an athletic striking implement having a grip portion, an impact portion for striking a playing object and a flexible shaft interconnecting said grip and impact portions, the improvement comprising:

indicating means actuatable to stroboscopically illuminate said implement to visually freeze its apparent position; and

sensing means carried by said implement for detecting flexural movement of said shaft and actuating said indicating means when said shaft completes a predetermined pattern of flexural movement.

4,239,228

GOLF SWING TRAINING DEVICE

Benjamin F. J. Norman, 201 - 93rd Ave., N.E., Blaine, Minn. 55434, and Clifford R. Brown, 7830 NE. Jackson, Fridley, Minn. 55421

Filed Mar. 23, 1979, Ser. No. 23,402
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—189 R **3 Claims**

1. A restraint device for use in improving a golfer's swing, comprising:

(a) first and second Y-shaped, flexible strap members each having a stem portion and two branch portions extending from said stem portion, there being a strip of fabric having one element of a two-element Velcro fastener affixed to the inside surface of one branch of each of said Y-shaped strap members and a strip of fabric having the other element of a two-element Velcro fastener affixed to the outside surface of the other branch of each of said Y-shaped strap members; and

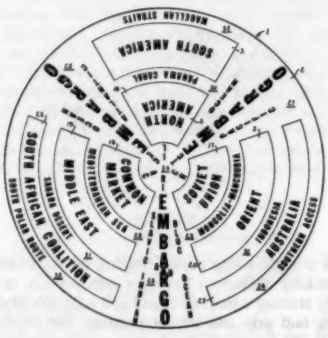
(b) further Velcro strip fastener means for separably joining said stem portions of said first and second Y-shaped strap members together with the branch portions of each generally extending in opposite directions, the arrangement being such that when said elements of said separable fasteners are engaged, said branch portions form segments of arm engaging loops.

4,239,229

GAME BOARD APPARATUS

Rolland S. Crossley, 4617 Forest, Kansas City, Mo. 64110

Continuation-in-part of Ser. No. 781,412, Mar. 25, 1977, abandoned. This application Jul. 25, 1978, Ser. No. 927,762
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—255 **12 Claims**



1. A game apparatus, comprising:

(a) a game board having a playing area divided into a plurality of separate regions; each of said regions representing a different cartel, and being assigned a separate name;

(b) a plurality of contest tokens associated with each player; said contest tokens are movable about said playing area between adjacent cartels for occupying a cartel, challenging opposing players to the right to occupy a cartel, and for defending such a challenge; said contest tokens being unlimitedly available;

(c) a plurality of battle computers operating cooperatively with said contest tokens for determining outcomes of challenges by opposing players; said battle computers allowing each of said opposing players to preselect the number of contest tokens to be risked in a particular challenge and providing a probability of success for said challenge; said battle computers also allowing each of said opposite players to choose indicia for a particular battle plan without knowledge of the plan chosen by opposing players until the chosen plans of all players are set in said battle computers; said battle computers also including means for comparing the indicia of opposing players and determining an outcome wherein the risked contest tokens of at least one of said opposing players may be removed from the playing area;

(d) a plurality of resource tokens; each of said resource tokens being related to one of a set of at least two different resources; resource tokens for each of the resources being limited in number; each of said resource tokens having a defined cooperative exchange relationship with said contest tokens; said contest tokens being used in the playing area being limited by such an exchange relationship;

(e) means for retaining therein excess resource tokens which are not associated with any cartel and forming among the players a common market place for exchanging a quantity of one resource for a quantity of another resource;

(f) a resource calculator having the name of each cartel noted thereon and designating each of said resources; said resource calculator including:

(1) means generating a fixed production index and a fixed consumption index related to the production index for each resource of each cartel; production and consumption indexes for each cartel being different but interrelated;

(2) means for defining an exchange relationship of surplus resources of one of the cartels and contest tokens;

(3) means establishing an exchange rate for exchanging a quantity of a first resource for a quantity of a second resource where said second resource has been exhausted within one of said cartels; and

(g) whereby in playing said game, each player receives resource tokens in accordance with said generating means for each cartel which the player occupies and must balance production and consumption of each resource for each of the cartels occupied by the player, and withholds selected resources from the market place and exchanges surplus resource tokens for contest tokens and challenges opposing players for the right to occupy a cartel, so as to ultimately obtain simultaneous occupation of a preselected, game-ending number of said cartels.

4,239,230

PEG BOARD GAME

Philip L. Shoptaugh, 611 Blair Ave., Piedmont, Calif. 94611

Filed Dec. 28, 1978, Ser. No. 974,167
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—264 **13 Claims**

1. In a game, the combination comprising:

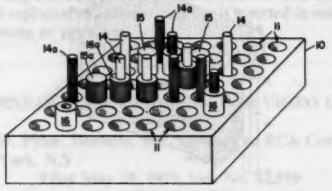
(a) a plurality of first playing pieces each having a cross-sectional configuration of given maximum external dimension;

(b) a plurality of second playing pieces having an annular cross-sectional configuration dimensioned to surround said given maximum external dimension of the cross-sec-

tional configuration of each of said plurality of first playing pieces when aligned therewith;

(c) a plurality of third playing pieces each having a cross-sectional configuration different from the cross-sectional configuration of said first and second playing pieces and each dimensioned to overlap said cross-sectional configurations of at least said plurality of said first playing pieces or said plurality of second playing pieces when aligned therewith; and

(d) a playing board having a plurality of playing fields each comprising a first hole dimensioned to receive one of said plurality of first playing pieces, said first hole having a second hole countersunk therewith at one surface of said



playing board and dimensioned to receive one of said plurality of second playing pieces;

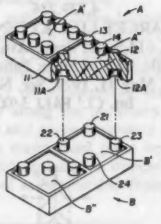
whereby one of said plurality of first playing pieces and one of said plurality of second playing pieces may be played simultaneously with each other at any one of said plurality of playing fields of said playing board with said second playing piece surrounding said first playing piece and each may be moved independently of the other to another playing field and whereby the playing of one of said plurality of third playing pieces at a given playing field of said playing board will physically block the playing of at least said plurality of first playing pieces or said plurality of second playing pieces at said given playing field.

4,239,231

THREE-DIMENSIONAL DOMINO GAME

David G. Henderson, 506 Sanchez St., San Francisco, Calif. 94114

Filed Jul. 28, 1978, Ser. No. 929,081
Int. Cl.[3] A63F 9/20
U.S. Cl. 273—293 4 Claims



1. In a domino-like game of skill, a set of 28 dominoes, each having two indicia segments and having:

(a) from 0 through 6 indicia in the form of raised pegs located in any of the same seven possible locations on the top surface of each segment, all raised pegs in the set being of the same size and shape, and,

(b) the same number of sockets in the under surface of each segment as there are raised pegs on the top surface, all sockets being complementary to the raised pegs and one socket being directly below each raised peg; and,

wherein the set includes one domino representing each possible combination of two numbers, each segment representing the number corresponding to the number of pegs it bears,

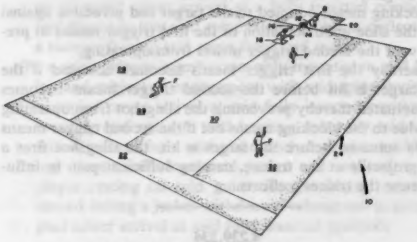
whereby the segments of each of said dominoes will nest upon or under identical and certain non-identical segments of other of said dominoes, when the sockets of an upper domino receive the pegs of a lower domino.

4,239,232

GAME OF CADDY

Vernon O. Durham, Sr., 200 11th Ave., Baltimore, Md. 21225

Filed Nov. 29, 1978, Ser. No. 964,477
Int. Cl.[3] A63B 67/00
U.S. Cl. 273—341 5 Claims



1. A game for at least two players having playing rules and a scoring system, comprising:

a structured playing field having a pitching area, a batting area, a fielding area, and a bonus scoring area, said areas being separate and adjacent to each other;

a pitching target ring means, said pitching target ring means being formed of segments and having interlocking elements for locking the segments together, said pitching target ring means being located within said batting area;

a caddy means for pitching toward said pitching target ring means;

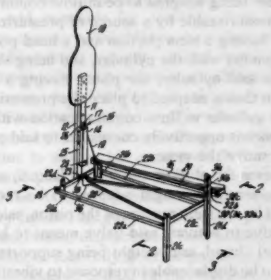
a means for controlling and batting said caddy means in a specified manner, said means for controlling and batting said caddy being tapered on the control end thereof in three directions at specified angles.

4,239,233

FIREARM TRAINING DEVICE

Paul Paquet, 163 Fulton Rd., Mamaroneck, N.Y. 10543

Filed Aug. 10, 1979, Ser. No. 65,646
Int. Cl.[3] F41J 5/00
U.S. Cl. 273—383 7 Claims



1. A firearm training device comprising:

a frame having a plurality of spaced legs projecting upwardly and a crossmember extending between each adjacent leg to form a rigid structure,

a target mounted to the crossmember at one end of the frame,

an inclined slide mounted to the frame and extending downwardly from one leg thereof to a second leg, said second leg being mounted to the crossmember having the target thereon,,

first trigger means coupled to the target crossmember and second trigger means mounted at the lower end of the slide to become actuated after a predetermined time interval,

a slingshot coupled at its ends to a pair of spaced legs and, under tension, at an intermediate point to the second trigger means,

a projectile positioned in the intermediate portion of the slingshot to be fired at a trainee,

blocking means coupled to the target and pivotable against the slide upon actuation of the first trigger means to prevent the second trigger means from operating,

whereby the first trigger means becomes actuated if the target is hit before the second trigger means becomes actuated thereby preventing the slingshot from operating due to the blocking means but if the second trigger means is actuated before the target is hit, the slingshot fires a projectile at the trainee, causing sufficient pain to influence the trainee's efforts.

4,239,234

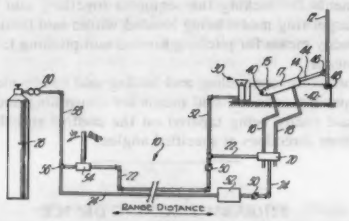
PNEUMATIC TARGET SYSTEM

Frederick D. Ward, St. Foy, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jan. 23, 1979, Ser. No. 5,740

Int. Cl.³ F41J *7/04*

U.S. Cl. 273—391 **7 Claims**



4. An apparatus adapted for use in a target indicating system having a target plate, said apparatus being operative to indicate a strike on the target plate, and comprising:

a housing defining a cylinder therein, one portion of said cylinder being adapted to be in flow communication with and pressurizeable by a source of pressurized gas;

a piston having a stem portion and a head portion in sealed engagement with the cylinder, and being slideably moveable in said cylinder, the piston having a bleed channel therein that is adapted to place the pressurizeable portion of the cylinder in flow communication with atmosphere;

biasing means operatively connected to said piston to selectively move the same;

valve means for closing said bleed channel; and

a motion-sensitive weight adapted to be removeably supported by the stem portion of the piston, said weight being operative to activate said valve means to keep said bleed channel closed, said weight being supported in a manner so as to be displaceable in response to vibrations generated by a strike on the target plate enabling deactivation of the valve means by pressure in said cylinder to uncover said bleed channel and thereby cause rapid depressurization of the cylinder and a correspondingly rapid lowering of the target plate to indicate a strike thereof.

4,239,235

TRAINING DEVICE FOR FOOTBALL OR FOR ALL GAMES USING A SMALL OR LARGE BALL

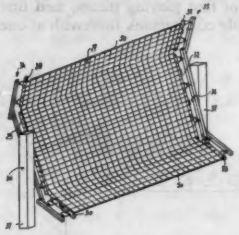
Remy G. Torres, 1 rue de la Scie, Seyssinet Pariset, Isere, France

Filed Jan. 6, 1978, Ser. No. 867,476

Claims priority, application France, Jan. 6, 1977, 77 00943; Nov. 10, 1977, 77 345281

Int. Cl.³ A63B *67/00*

U.S. Cl. 273—395 **7 Claims**



1. A training device for rebounding a game ball comprising:

at least one pair of substantially parallel spaced apart elongated rigid upright members;

an inextensible net stretched between said at least one pair of substantially parallel rigid upright members;

elastic means attached to said at least one pair of substantially parallel rigid upright members and extending outward from said net;

at least one pair of elongated terminal stiffeners, each stiffener being substantially parallel to and spaced from said respective upright member and being attached to said elastic means, said at least one pair of terminal stiffeners further being mounted adjacent said at least one pair of substantially parallel rigid upright members such that said at least one of said pair of substantially parallel rigid upright members, said one pair of terminal stiffeners and said elastic means cooperate to form a stretched out inextensible net structure for rebounding a game ball; and

means for pivotally mounting each of said stiffeners to an upright support structure to thereby render said net angularly adjustable relative to a support surface.

4,239,236

TARGET LIFE EXTENDER

Roger R. Parham, 613 South Sneve Ave., and Glenn D. Adler, 212 South LaSalle, both of Sioux Falls, S. Dak. 57103

Filed May 11, 1979, Ser. No. 38,343

Int. Cl.³ F41J *3/00*

U.S. Cl. 273—403 **5 Claims**

1. An archery target comprising:

(a) at least one sheet of foamed plastic material of predeter-

mined size and thickness dimensions, said sheet having a central opening of a predetermined diameter;

(b) a replaceable bullseye member comprising first and second circular disks of foamed plastic material bonded together along abutting major surfaces thereof, said first disk of a diameter corresponding to said predetermined diameter of said opening in said one sheet and said second disk of a greater diameter;

(c) a flexible tubular sleeve member having one closed end and one open end; and

(d) a resilient pad member contained within said flexible sleeve member and abutting said closed end of said sleeve member, said open end of said sleeve member surrounding the side surfaces of one of said first or second disks when said replaceable bullseye member is inserted in said central opening or openings.

4,239,237

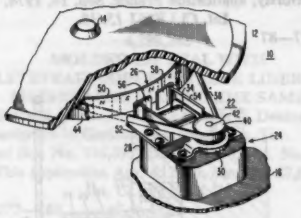
TURNTABLE DRIVE SYSTEM FOR VIDEO DISC PLAYER

Gerald D. Pyles, Danville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 42,919

Int. Cl.³ A02P 5/46

U.S. Cl. 274—1 E **5 Claims**



1. A turntable drive system comprising:

(a) a housing;

(b) a turntable rotatably mounted in said housing;

(c) turntable rotating means including a stator and a rotor; said stator consisting of a core defining an airgap for receiving said rotor, and a field winding for establishing an alternating magnetic flux of a given frequency in said core;

(d) yieldable means for coupling said rotor to said turntable to cause said turntable to rotate;

(e) turntable speed control means including a pair of pole pieces, means coupled to said core for diverting a portion of said magnetic flux to said pair of pole pieces, and a ring mounted on said turntable adjacent to said pole pieces and having a plurality of permanently magnetized poles of alternate polarity along the periphery thereof; the relationship between said given frequency and the number of said permanently magnetized poles being such that said turntable speed control means oppose deviations in the rate of rotation of said turntable from a desired rate of rotation.

4,239,238

RECORD EXTRACTING MECHANISM FOR CADDY TYPE VIDEO DISC PLAYER

Clyde F. Coleman, Crawfordsville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 81,494

Claims priority, application United Kingdom, Apr. 6, 1979, 12288/79; Apr. 6, 1979, 12290/79

Int. Cl.³ G11B 5/82, 25/04

U.S. Cl. 274—9 B **7 Claims**

3. A player for recovering prerecorded signals from a disc record removably subject to occupancy of a protective cover comprising a jacket and a record retaining spine removably located therein; said spine being provided with a latch member for releasably securing said spine to said jacket; said player comprising:

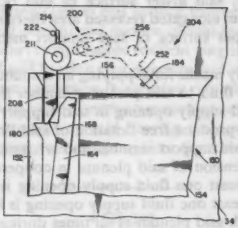
(A) a housing having an input slot into which an occupied cover is inserted along a path for loading a record therein;

(B) a turntable rotatably mounted in said housing;

(C) a guide disposed in said housing;

(D) a spine unlocking member movably-mounted in said housing and subject to deflection away from a starting position; said spine unlocking member being located along said cover insertion path when occupying said starting position thereof such that it is wedged between said spine latch member and an interior portion of said jacket during an occupied cover arrival at a fully inserted position in said player so that said spine latch member is deflected in a manner freeing said spine from said jacket;

(E) a spine gripper member movably-mounted in said housing and subject to engagement with said spine during an occupied cover arrival at said fully inserted position for securing said spine to said housing, whereby said spine, which is freed from said jacket and secured to said housing, is removed from said jacket and retained in said player resting on said guide along with an associated record during a jacket withdrawal subsequent to an occupied cover arrival at said fully inserted position;



wherein said spine unlocking member is displaced away from said starting position to a deflected position when released from engagement with said interior portion of said jacket during said jacket withdrawal, whereby said spine latch member is freed from interference by said spine unlocking member;

(F) means for transferring said retained record from said guide to said turntable for playback; said transferring means also serving to transfer said retained record from said turntable to said guide for record retrieval;

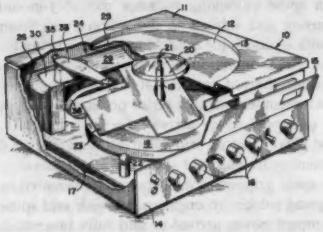
wherein an empty jacket is inserted into said input slot along said path for retrieving said retained record resting on said guide; wherein said spine latch member, having been freed from interference by said spine unlocking member, serves to secure said spine to said jacket upon arrival of said jacket at said fully inserted position; wherein the location of said spine unlocking member occupying said deflected position is such that said empty jacket engages said deflected spine unlocking member to cause further displacement thereof during arrival of said empty jacket at said fully inserted position; and

(G) means responsive to said further displacement of said spine unlocking member for effecting motion of said spine gripper member away from said spine in a manner releasing said spine from said housing so that said spine secured to said jacket effects removal of an accompanying record from said player during subsequent cover withdrawal.

4,239,239
PHONOGRAPH TONE ARM SYSTEM

Earl E. Masterson, Minneapolis, Minn., assignor to Masterson Engineering Inc., St. Louis Park, Minn.

Filed Jun. 28, 1979, Ser. No. 52,730
Int. Cl.[3] G11B *03/38*
U.S. Cl. 274—23 A 9 Claims



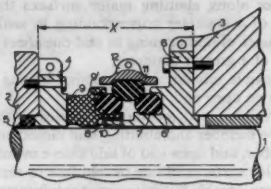
1. A phonograph tone arm system comprising:
low friction tone arm support means, said support means further comprising:
support member defining a linear substantially horizontal path of travel having an axially curvilinear upper surface in the form of a circular cylinder segment;
floating member supported above and disposed to travel along said support member, said floating member having an axially curvilinear lower surface juxtaposed and matching the shape of said upper surface of said support member, said lower surface of said floating member having an elongated recessed area therein defining with said upper surface of said support member a hollow plenum;
fluid supply means for supplying an amount of pressurized gaseous fluid to said plenum chamber through at least one fluid supply opening in said support member sufficient to produce free flotation of said floating member above said support member and wherein the longitudinal dimension of said plenum in cooperation with the said at least one fluid supply opening is such that the said at least one fluid supply opening is in communication with said plenum at all times during normal linear displacement of said floating member to play a storage medium such that fluid escapes only about the peripheral edges of said plenum;
tone arm means carried by said floating member said tone arm means including pickup means adapted to traverse a phonograph record along a radial path during the linear displacement of said floating member;
signal conducting means for conducting signals from said pickup means to a signal processing means.

4,239,240
ROTARY MECHANICAL FACE SEALS

Samuel C. W. Wilkinson, Chichester, England, assignor to Crane Packing Limited, Slough, England

Filed Aug. 7, 1979, Ser. No. 64,369
Int. Cl.[3] F16J *15/34*
U.S. Cl. 277—84 8 Claims

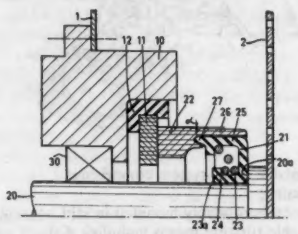
1. A rotary mechanical face seal assembly comprising an annular seal face member having an axis, an annular seat, said seat and said seal face member being relatively rotatable about said axis and being in mutual rubbing contact over radial faces thereof, said seat being axially fixed and said seal face member being axially movable, an axially fixed structure with which said seal face member is associated, and with respect to which said seal face member is non-rotatable, a first annular surface associated with said seal face member and a second annular surface associated with said structure, said surfaces being inclined with respect to said axis and converging towards one another, and a hoop-like circumferentially stressed ring, said ring making line contact with said first and second surfaces, thereby forming a seal with each of said surfaces and at the same time having a wedging action by virtue of its circumferential stress, such as to urge said surfaces axially apart and thereby urge said seal face member axially into rubbing contact with said seat.



4,239,241
FLUID SEAL ASSEMBLY

Jean Menager, Luxembourg, Luxembourg, assignor to Societe Internationale de Mecanique Industrielle S.A., Luxembourg, Luxembourg

Filed Aug. 28, 1979, Ser. No. 70,520
Claims priority, application France, Sep. 14, 1978, 78 26491
Int. Cl.[3] F16J *15/38*
U.S. Cl. 277—87 3 Claims

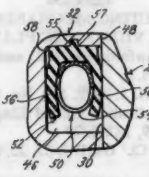


1. A fluid seal assembly to be mounted between a fixed part and a rotary shaft, comprising a slide ring secured to a resilient sealing member attached to the shaft and urged by a spring into engagement with a counter-ring secured to the fixed part, said slide ring having an axial extension embracing the resilient sealing member, wherein the slide ring has a smooth external surface which tapers inwardly in the direction remote from the sliding surface thereof.

4,239,242
PIPE UNION AND SEAL

William G. Burns, 23 Barberry La., St. Louis, Mo. 63122

Filed Dec. 18, 1978, Ser. No. 970,541
Int. Cl.[3] F16J *15/12, 15/32*
U.S. Cl. 277—153 5 Claims



1. A pipe union and seal in combination comprising:

(a) A first pipe member having a central passageway therethrough, a flange having a substantially flat sealing surface, said flange having a shoulder,

(b) A fastening member having an inwardly extending flange with a central passageway adapted to fit around said first pipe member, said inwardly extending flange adapted to abut said shoulder as said fastening member is fitted over said first pipe member, and thread means formed on the inner surface of said fastening means,

(c) A second pipe member having a central passageway therethrough, thread means formed on the outer surface of said second pipe member and adapted to receive and engage the thread means of the fastening member, said second pipe member having a face opposing the sealing surface of said first pipe member, means defining a trough in said face for receiving and retaining a sealing means, and

(d) A compound sealing means positioned in said trough, said seal having a central spring and a U-shaped outer shell surrounding said spring with the open end of said shell being disposed radially inwardly so that increased pressure within the central passageway increases the sealing engagement between each leg of the shell and its corresponding surface.

4,239,243

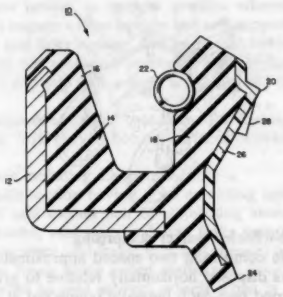
MOLDED LIP SEAL WITH POLYTETRAFLUOROETHYLENE LINER AND METHOD FOR MAKING THE SAME

Dean R. Bainard, Clover, S.C., and Dennis N. Denton, Gastonia, N.C., assignors to Garlock Inc., Longview, Tex.

Division of Ser. No. 746,392, Dec. 1, 1976, Pat. No. 4,171,561. This application Apr. 4, 1979, Ser. No. 27,003

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—153 **10 Claims**



5. A shaft seal comprising an annular metal shell, an annular elastomeric body having a molded lip, said elastomeric body having an annular heel portion and an annular flex portion extending axially inwardly from a radially inner portion of said heel portion, said elastomeric body being generally U-shaped in radial cross-section, with the opening of the U facing axially inwardly, said heel portion having a radially outer, axially extending surface bonded to said shell, said molded lip having bonded thereto a hydraulically formed liner of uniform thickness of sintered polytetrafluoroethylene, said body being molded simultaneously with said liner being hydraulically formed from a ring of sintered polytetrafluoroethylene and bonded to said elastomeric body, and a plurality of hydraulically formed hydrodynamic pumping elements on a shaft-engaging surface of said liner and formed simultaneously with said liner being formed.

4,239,244

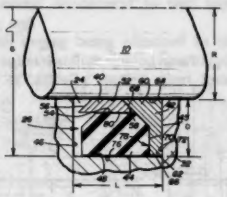
HYDRAULIC PISTON ROD SEAL

Robert G. Brent, Arlington, Tex., assignor to Textron, Inc., Providence, R.I.

Filed May 26, 1978, Ser. No. 910,008

Int. Cl.³ F16J *9/16*

U.S. Cl. 277—188 R **21 Claims**



1. In a hydraulic cylinder, a three-part seal to be fixed in a gland formed on the first of two mating cylindrical structures, said gland having a bottom wall confronting the second cylindrical structure, wherein fluid under pressure is to be contained forward of said gland comprising:

(a) a continuous nondeformable bearing ring in said gland having a cylindrical surface for contact with the surface of the second of said cylindrical structures and having an annular surface facing away from said second of said cylindrical structures and having a conical rearward facing end surface diverging outwardly from said first cylindrical surface;

(b) a continuous nondeformable backup seal ring having a forward facing conical end surface mating with the rearward facing conical end surface of said bearing ring; and

(c) a continuous compressible resilient ring in said gland on the side of said bearing ring opposite said second cylindrical structure contacting the bearing ring, the seal ring and gland bottom wall whereby pressure on said resilient ring transmits pressure to said bearing ring and backup seal ring to engage said rings against the second cylindrical structure.

4,239,245

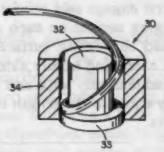
PACKING SEALS AND METHOD OF MAKING

Richard J. Giglio, Tewksbury; Robert B. Bogosh, Burlington, both of Mass., and David A. Lasnier, Londonderry, N.H., assignors to A. W. Chesterton Company, Stoneham, Mass.

Filed Dec. 7, 1979, Ser. No. 101,635

Int. Cl.³ F16J *15/44, 15/54;* B29C *17/02*

U.S. Cl. 277—203 **9 Claims**



1. A method of making a packing seal comprising:

compression molding a thermo-setting plastic in a spiral mold under heat so as to form a partially-cured spiral seal,

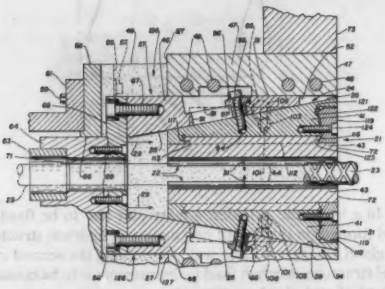
removing said partially-cured spiral seal from said mold and winding it on a mandrel,

applying heat to said mandrel and partially-cured seal so as to cure said seal, and

removing said seal from said mandrel.

9. A packing seal made in accordance with the method of claims 1 or 2.

4,239,246
RIGID CHUCK ASSEMBLY
James W. Howlett, 746 Folger Ave., Berkeley, Calif. 94710
Filed Dec. 22, 1978, Ser. No. 972,273
Int. Cl.³ B23B *31/10*
U.S. Cl. 279—121 **7 Claims**



1. A chuck assembly for rigidly gripping an elongated reinforcing bar having a plurality of ribs or protrusions thereon to enable machining thereof by a machine tool or the like, said chuck assembly including a pair of jaw members each having a first side formed to engage said reinforcing bar and an oppositely facing second side formed with an elongated surface extending along said second side, said jaw members being mounted in equal, relatively spaced apart relation about a longitudinally extending central axis for receipt and gripping of said reinforcing bar therebetween, said jaw members each being further mounted to said assembly for reciprocation of the first sides thereof toward and away from said central axis; a pair of wedge members mounted to said assembly and each including an elongated jaw engaging surface mounted in sliding engagement with said second side of each of said jaw members; and containment means formed with load supporting surfaces slidably engaging sides of said wedge members facing away from said jaw members for support thereof, said wedge members each being mounted to said assembly intermediate said containment means and said jaw members and being movable in a direction along said central axis to urge said jaw members toward said central axis and generate lateral gripping forces between said jaw members, wherein the improvement in said chuck assembly comprises:

said first sides of said jaw members each being formed for line contact with said reinforcing bar along lines extending along said central axis;

said first sides being further formed with a length dimension equal to at least 4 times twice the distance from said first sides of said jaw members to said central axis when said first sides first engage said reinforcing bar; and

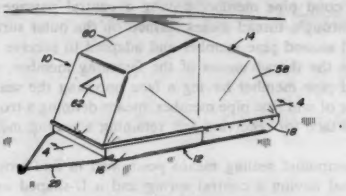
said jaw engaging surface on each of said wedge members and said load supporting surfaces on said containment means each extending axially along said central axis substantially coextensively with and over a distance at least substantially equal to the length of said first sides of said jaw members.

4,239,247
PORTABLE ANGLING HOUSE
James E. Hinz, Rte. 2, Box 98, Osakis, Minn. 56360
Filed Mar. 16, 1979, Ser. No. 21,436
Int. Cl.³ E04B *1/347*
U.S. Cl. 280—12 S **5 Claims**

1. A portable, collapsible angling house comprising, in combination:

a base portion comprising a first section and a second section, said second section being received in said first section when the angling house is in its collapsed configuration and said second section extending from said first section when the angling house is in its erect configuration, and a pair of runners formed in said first section positioned longitudinally of said first section and on either side of a raised central area of said first section,

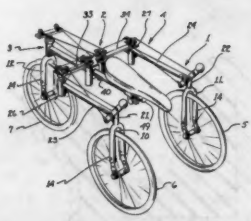
a first angling hole disposed in said central raised section of said first base portion for communicating the interior of said angling house with a support surface;



a top structure comprising a plurality of frame members radially extending from a common mounting position disposed on one of said base sections and foldable into that section; and

fabric covering attached to said frame members, said second section having a configuration similar to said first section with a pair of runners disposed on either side of a raised center portion and a second angling hole disposed in the raised center portion of said second section.

4,239,248
COLLAPSIBLE WALKER
Marion H. Ewers, 306 S. Broadway, Marlow, Okla. 73055
Filed Oct. 10, 1978, Ser. No. 949,916
Int. Cl.³ B62M *1/00*
U.S. Cl. 280—42 **7 Claims**



1. A three-wheeled walker comprising:

(a) a frame comprising two spaced approximately parallel first bars disposed horizontally relative to ground level; two second bars each hingedly connected at one end to said first bars for horizontal movement, the other ends of said second bars approaching each other; a third bar to which said other ends of said second bars are hingedly connected for horizontal movement intermediate the ends of said third bar;

(b) seat means carried by a first end of said third bar between said spaced first bars;

(c) first wheel means attached to said first bars in supporting relationship;

(d) second wheel means steerably attached to the second end of said third bar in supporting relationship thereto;

(e) remote control means adapted to steer said second wheel means;

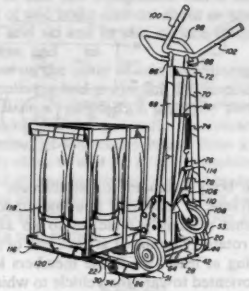
(f) detent means for releasably locking said first, second and third bars into a fixed operative position relative to each other;

whereby said walker may be folded for transportation and storage and unfolded and locked into place for use.

4,239,249
PROJECTILE PALLET TRUCK

John M. Sprague, Mt. Carroll, Ill., assignor to United States of America, Washington, D.C.

Filed Apr. 27, 1979, Ser. No. 33,936
Int. Cl.³ B62B 1/08
U.S. Cl. 280—47.2 6 Claims



1. A projectile pallet hand truck comprising:

a base frame including a pair of spaced L-shaped plates having lower legs forming truck forks, said forks having curved bottom surfaces, said forks having fork wheels thereon, said plates having upper legs with a pair of support wheels thereon, said plates having a pluralty of connecting members therebetween to maintain said plates in spaced relationship,

said plates having a first pair of said connecting members near the lower ends of said upper legs, one of said first pair being tubular to receive an axle, an axle extending therethrough, said support wheels being attached to said axle,

a third support wheel affixed to a second pair of said connecting members,

said frame having an upright position wherein said fork wheels engage a floor surface and said support wheels are above said floor surface, said frame also having a support position whereby said support wheels engage said floor surface and said fork wheels are above said floor surface, and

means connected to said base frame for rocking said frame on said fork curved bottom surfaces between said positions,

said means including a handle section,

said handle section having arms extending upwardly from one of said second pair of connecting members on said base frame, said arms and said forks supporting a load thereon when said frame is in said support position,

said base frame being raised above said floor surface and supported by said support wheels when in said support position.

4,239,250
HITCH POSITIONING MECHANISM

Russell W. Tolle, P.O. Box 261, Chanute, Kans. 66720

Filed Mar. 5, 1979, Ser. No. 17,347
Int. Cl.³ B60D 1/14
U.S. Cl. 280—446 B 6 Claims

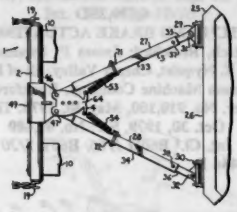
1. A mechanism adapted for attachment to a hitch; and hitch characterized by having first and second arms and a support member, said support member having a pivotal attachment to each of said first and second arms near one end thereof and the opposite ends of said arms being pivotal and spaced at a fixed distance relative to each other respectively; said mechanism comprising:

(a) first and second tension means being substantially equivalent with respect to the tension developed respectively upon elongation thereof; one end of said first and second tension means being attached medially and at an equal distance along said first and second arms respectively;

(b) lever arm means being attached near one end thereof to and extending generally perpendicularly from said support member;

(c) said one end of said lever arm means being attached to said support member whereat said first and second arms form said pivotal attachment to said support member respectively; and

(d) said tension means being attached to said lever arm means at an equal distance spaced apart from said one end thereof and at laterally spaced apart locations thereon



characterized by the tension in each of said tension means developing a vector force passing through said pivotal attachment to said support member of the arm opposite the arm to which said tension means is attached respectively when said support member is in said parallel position, whereby the tension in each said tension means is equal and at a minimum whenever said support means is in said parallel position thereby forming a state of equilibrium tension and the tension in both tension means are unequal whenever said support member is deflected from said parallel position thereby forming a state of equilibrium and urging said support member to return to said parallel position.

4,239,251
COMPENSATING HITCH

Alvin N. Rocksvold, Woodland, Calif., assignor to Marvin Landplane, Woodland, Calif.

Filed Jul. 26, 1979, Ser. No. 60,865
Int. Cl.³ B60D 1/00
U.S. Cl. 280—446 A 8 Claims

1. A compensating hitch adapted for coupling between a three-point draft system at the rear end of a tractor and the front end of a trailing earthworking implement in three-point draft relation to the latter; said compensating hitch comprising an upstanding front frame including a front cross beam and a central post upstanding therefrom, means to connect said front frame with the three-point draft system of the tractor, a rear cross beam in spaced parallel relation to the front cross beam, rigid longitudinal arms on and projecting forward from the ends of the rear cross beam, means transversely pivoting the longitudinal arms at their front ends in connection with the corresponding ends of the front cross beam, a central link upstanding above the rear cross beam, means transversely pivoting the link at its lower end in connection with the rear cross beam, a bellcrank lever disposed rearward of the upper portion of the upstanding central link, the bellcrank lever incuding an upper forwardly projecting leg and a rear depending leg, means transversely pivoting the upper end of the link

in connection with the front end of the upper forwardly projecting leg of the bellcrank lever, a separate link extending longitudinally between the bellcrank lever and the post in adjacent but clearance relation to the upstanding central link, means transversely pivoting said separate link at the front end in connection with the post and at the rear end with the lower end of the rear depending leg of the bellcrank lever, and means to connect the ends of the rear cross beam, and the bellcrank lever at its elbow, to the front end of the implement in three-point draft relation.

4,239,252

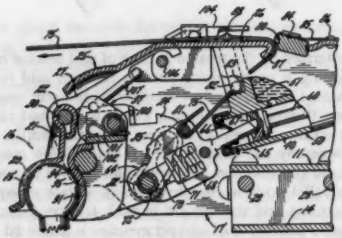
TRAILER HITCH AND BRAKE ACTUATING ASSEMBLY

Larry C. Huetsch, Rockford; James P. Swanson, Winnebago, and Stephen E. Nyquist, Cherry Valley, all of Ill., assignors to Atwood Vacuum Machine Company, Rockford, Ill.

Division of Ser. No. 910,100, May 30, 1978. This application Oct. 30, 1979, Ser. No. 89,489

Int. Cl.[3] B60D *1/06*; B60T *7/20*

U.S. Cl. 280—446 R 2 Claims



1. An assembly for hitching a trailer to a ball on a towing vehicle and for automatically actuating the brakes of the trailer when the latter overruns the towing vehicle, said assembly comprising a forward unit adapted to be coupled removably to the ball, a rear unit adapted to be carried by the trailer and interconnected with the forward unit to pivot relative to the forward unit about a first laterally extending axis located above the ball, means carried by said rear unit and operable to apply the brakes of the trailer in response to relative pivoting of said units when the trailer overruns the towing vehicle, said forward unit comprising a head having a downwardly and rearwardly opening socket for receiving the ball, a clamp connected to said head to pivot about a second laterally extending axis between released and locked positions, said clamp closing the rear of said socket and retaining the ball in said socket when said clamp is in said locked position, a latch movable with said clamp and connected to said clamp to pivot relative to the clamp about a third laterally extending axis located above said second axis, said latch being movable about said third axis from a released position to an intermediately latched position and then to a fully latched position, said latch permitting said clamp to move to its released position when said latch is in its released position, a manually operable lever mounted on said rear unit to pivot about a fourth laterally extending axis between a released position and a locked position, a link connected pivotally between said lever and said latch and operable to move said latch to its released position when said lever is manually moved to its released position, a spring acting between said clamp and said latch and urging said latch to its intermediately latched position after said lever has been moved to its released position and has been manually released, said latch being biased into engagement with said head when said latch is in its intermediately latched position and serving to hold said clamp in its locked position.

4,239,253

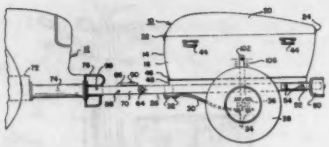
BODY EXTENDER

Richard R. Golze, 637 Kingsley Trail, Bloomfield Hills, Mich. 15090

Filed Apr. 21, 1978, Ser. No. 898,976

Int. Cl.[3] B62D *63/06*; B60D *1/00*

U.S. Cl. 280—460 R 7 Claims



1. A vehicle body extender for attachment to a vehicle comprising a frame, at least one housing supported by said frame, said frame resiliently attached to an axle by spring means, wheels rotatably mounted at each end of said axle, said frame comprising at least two frame members longitudinally extending and oriented toward the vehicle to which said extender is to be coupled, connecting means to rigidly connect said longitudinally extending frame members to said vehicle, said longitudinally extending frame members are each provided with a pivotal connecting means to permit said extender and said vehicle to move vertically with respect to one another, said vehicle having a frame and being provided with a rear bumper means attached to said frame of said vehicle by energy absorption means, said bumper means receiving each said frame members for rigid attachment thereto, said bumper means includes a recess to receive each of said frame members and each said longitudinally extending frame member terminates in said recess in an abutting relation with a stop means provided at the inward end of said recess and near where said energy absorption means connects to said bumper means to be in substantial longitudinal alignment.

4,239,254

BINDING ACTUATED SKI BRAKE

Tilo Riedel, Eching, Fed. Rep. of Germany, assignor to Etablissements Francois Salomon & Fils, Annecy Haute-Savoie, France

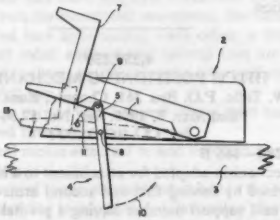
Continuation-in-part of Ser. No. 707,453, Jul. 21, 1976, abandoned. This application May 15, 1978, Ser. No. 906,129

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1975, 2532736

The portion of the term of this patent subsequent to Feb. 6, 1996, has been disclaimed.

Int. Cl.[3] A63C *7/10*

U.S. Cl. 280—605 7 Claims



6. In combination:

an elongated ski having an upper surface and constituting a first component;

clamp means on said ski constituting a second component and movable toward and away from said ski about a clamp axis transverse to said ski and generally parallel to said

surface for securing a skiboot to and freeing same from said ski;

an elongated brake element having a laterl projection;

means defining between said brake element and one of said components a first pivot spaced from said projection for pivoting of said brake element about an element axis transverse to said ski and generally parallel to said surface on said one component and displacement of said projection relative to said one component and a second pivot for pivoting of said brake element about an upright axis transverse to said ski and to said surface relative to said one component; and

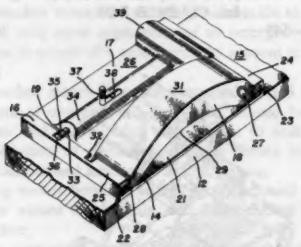
guide means on the other of said components and having a recess receiving said projection for pivoting of said brake element from a rest position generally parallel to said ski to a braking position generally transverse to said ski on displacement of said clamp means from a down position relatively close to said ski to an up position relatively far from said ski and for pivoting of said brake element laterally about said upright axis when in said rest position from a position adjacent said ski to a position at least partially overlying said surface.

4,239,255

SKI ATTACHMENT

Ronald B. Boudreau, Patterson Rd., Shirley, Mass. 01464, and John P. Crossin, 69 Peabody Dr., Stowe, Mass. 01775

Filed Dec. 28, 1978, Ser. No. 973,853
Int. Cl.³ A63C 7/10
U.S. Cl. 280—605 **5 Claims**



1. Ski attachment, comprising:

(a) a rectangular base plate adapted to be fastened to the upper surface of a ski and having a track at each transverse end, each of said tracks consisting of a vertical end wall and a flange extending horizontally and inwardly from the upper edge of the vertical wall,

(b) a generally rectangular movable plate extending between the said end walls and fitting snugly under the flanges for sliding movement transversely of the ski between an operative position and an inoperative position, said movable plate having a width which is a selected amount less than the width of the ski,

(c) a pawl having a thickness in the transverse direction of the ski which is generally equal to said selected amount, one end of said pawl being mounted on the movable plate for pivotal movement about a horizontal axis adjacent the forward end of the base, and the other end of the pawl lying over the base plate and under the flange of the rearward flange when the movable plate is in the inoperative position, so that the pawl is prevented from pivoting about said horizontal axis, said pawl lying outside of the ski and the rearward flange when the movable plate is in the operative position, so that the pawl is free to pivot about said horizontal axis,

(d) a detent for selectively locking the movable element against transverse sliding in either said inoperative position or said operative position, and

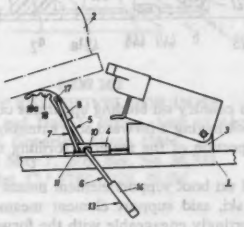
(e) means for biasing said other end of the pawl against the base plate when the movable plate is in said inoperative position and for biasing said other end against the ground when the movable plate is in said operative position.

4,239,256

SKI BRAKE

Erwin Krob, Vienna, and Erwin Weigl, Brunn am Gebirge, both of Austria, assignors to TMC Corporation, Zug, Switzerland

Continuation of Ser. No. 824,709, Aug. 15, 1977, abandoned. This application Jun. 22, 1979, Ser. No. 51,183
Claims priority, application Austria, Sep. 16, 1976, 6891/76
Int. Cl.³ A63C 17/10
U.S. Cl. 280—605 **16 Claims**



1. A ski brake for preventing free flight of a ski upon the release thereof from a ski boot, comprising:

a mounting plate on the upper surface of said ski;

a first U-shaped wire bar mounted on said mounting plate by first mounting means for pivotal movement between an inoperative position wherein a first bight of said wire bar lies substantially along said upper surface and an operative position wherein said first bight is upstanding from said upper surface, the legs of said U-shaped wire bar each having a segment therein bent to extend at a right angle to the longitudinal axis of said ski, said leg segments being axially aligned and defining the pivot axle for said first U-shaped wire bar;

at least one brake arm mounted on said first U-shaped wire bar and adapted to swing from a position wherein it lies along a longitudinal edge of the ski into a position in which it projects below a running surface of the ski upon movement of said first bight between said inoperative position and said operative position;

a second U-shaped spring wire bar mounted on said mounting plate by second mounting means for pivotal movement about an axis spaced along the longitudinal axis of said ski from and parallel to said pivot axle and between an inoperative position wherein a second bight of said wire bar lies substantially along said upper surface of said ski and an operative position wherein said second bight is upstanding from said upper surface of said ski;

spring means bearing upon said second U-shaped spring wire bar for biasing same into said operative position;

a stepping plate connected to said first bight by third mounting means and connected to said second bight by fourth mounting means; and

one of said mounting means comprising lost motion connection means for facilitating a compensation for the change in spacing between said first and second U-shaped bars when said first and second U-shaped wire bars are pivoted simultaneously between said inoperative positions and said operative positions whereby said spring means provides the sole force to effect a movement of both of said first and second U-shaped bars simultaneously from said inoperative position to said operative position without deformation of said first U-shaped bar.

4,239,257

CROSS COUNTRY SKI BINDING

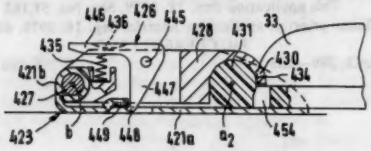
Peter Biermann, Leoeberg; Rudi Feucht, Weissach; Manfred Schmidt, Sindelfingen, and Ralf Storandt, Leonberg, all of Fed. Rep. of Germany, assignors to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Fed. Rep. of Germany

Filed Feb. 22, 1978, Ser. No. 880,110

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 2707626

Int. Cl.[3] A63C 9/18

U.S. Cl. 280—615 20 Claims



1. Cross country ski binding apparatus comprising:

a ski boot having a forward sole extension formed as a unitary portion of the material forming the sole of the ski boot,

forward ski boot support element means fixedly attachable to a ski, said support element means including means supportingly engageable with the forward sole extension of the ski boot while permitting lifting of the rear part of said ski boot from the ski,

and latching means for engaging said support element means with said forward sole extension to latch said sole extension to said ski while permitting hinged movement of the ski boot with respect to said ski about a hinge articulation axis extending crosswise to the ski,

said forward sole extension extending a short distance beyond the toe part of the shoe, the forward end of the sole extension forming a hinge articulation part cooperating with the latching means and the support element means to permit said hinged movement about said articulation axis extending through said articulation part,

wherein said latching means includes retaining jaw means for restraining movement of said ski boot in lateral directions and a locking member for clamping said forward sole extension against upward movements, and wherein, by means of an arcuate transverse member that engages behind the hinge articulation part in a depression in the forward sole extension, the locking member is in engagement with the forward sole extension, clamping it toward the front against lateral jaw parts of said retaining jaw means.

4,239,258

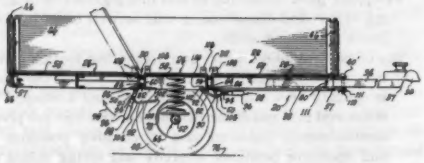
FOLD-UP TRAILER ASSEMBLY

Frank H. Burris, 4165 Oak Hollow Rd., Claremont, Calif. 91711

Filed Dec. 11, 1978, Ser. No. 968,455

Int. Cl.[3] B62D 63/00

U.S. Cl. 280—639 10 Claims



1. A trailer being foldable for storage and being extendable for transporting loads over the ground, comprising:

a forward bed portion;

a rear bed portion;

a center bed portion positioned between said forward and rear bed portions and generally parallel to the ground;

first transverse hinge means connecting said forward bed portion to said center bed portion for rotation of said forward bed portion between a horizontal position planar with said center bed portion and a vertical position perpendicular to and generally above said center bed portion;

second transverse hinge means connecting said rear bed portion to said center bed portion for rotation of said rear bed portion between a horizontal position planar with said center bed portion and a vertical position perpendicular to and generally above said center bed portion;

first lock means connected between said center bed portion and said forward bed portion for selectively retaining said center and forward bed portions in planar orientation with respect to each other for transporting loads;

second lock means connected between said center bed portion and said rear bed portion for selectively retaining said center and rear bed portions in planar orientation with respect to each other for transporting loads; and

a wheel assembly connected to said center bed portion for supporting said trailer on the ground.

4,239,259

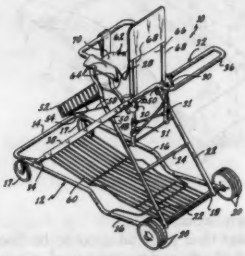
HEIGHT ADJUSTABLE INFANT STROLLER-HIGH CHAIR

Virginia R. Martinez, Apt. H-11, 451 Casselman St., Chula Vista, Calif. 92010

Filed Apr. 6, 1979, Ser. No. 27,608

Int. Cl.[3] B62B 7/08

U.S. Cl. 280—649 8 Claims



1. An improved height adjustable infant stroller-high chair apparatus comprising in combination:

a seat member

supporting means for positioning said seat member at a selected elevation for positioning said seat member through a plurality of different selected vertical elevations; and leveling means positioned between said seat member and said supporting means selectively adjustable for maintaining the infant supporting surface of said seat member substantially parallel with said infant supporting surface at each of said plurality of different selected vertical elevations,

said supporting means comprises, a pair of first and second diagonally disposed and pivotally attached frame members, a pair of frame support members each having a pivotal attachment to each pair of said frame members, a plurality of slots located along the inner surface of each of the first frame members for selectively positioning the pivotal connection between said first and second frame members, a seat member support bracket, said seat member support bracket having a first pivotal attachment to one end of each of the second frame members and a second pivotal attachment to said seat leveling means and a pair of telescoping members each pivotly connected be-

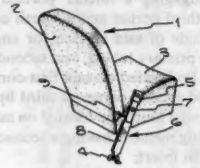
tween said seat leveling means and one of said second frame members.

4,239,260

ADJUSTABLE EMERGENCY LOCKING BUCKLE ANCHOR

William M. Hollowell, Pacific Palisades, Calif., assignor to American Safety Equipment Corporation, San Fernando, Calif.

Filed Jun. 25, 1979, Ser. No. 51,696
Int. Cl.³ B60R 21/10
U.S. Cl. 280—806 11 Claims



1. An adjustable emergency locking anchor means for mounting a safety restraint buckle at a substantially fixed location relative to an adjustable vehicle seat to be maintained adjacent to a seat occupant's hip during fore and aft adjustment of said seat, said adjustable emergency locking anchor means comprising:

floor anchor means for securing said buckle to said vehicle floor only upon application of an emergency restraining force in excess of a predetermined amount to said buckle; and

seat anchor means adjustably attached to said floor anchor means at one end and connected to said buckle on the other end for securing said buckle to said seat during application of normal restraining forces less than said predetermined amount;

locking means between said floor anchor and said seat anchor means for locking said floor anchor to said seat anchor;

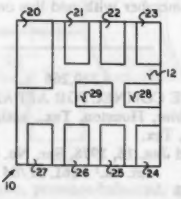
means responsive to said emergency restraining force for actuating said locking means, whereby said buckle is maintained in the same position relative to said occupant's hip as said seat is adjustably moved fore and aft and is secured to said floor upon application of an emergency restraining force on said buckle relative said seat of an amount in excess of a predetermined amount.

4,239,261

MICRO-MARKING LABEL AND APPARATUS

Robert H. Richardson, 8361 Sylvan Dr., Melbourne, Fla. 32901

Filed Aug. 24, 1978, Ser. No. 936,241
Int. Cl.³ G09F 3/03
U.S. Cl. 283—21 6 Claims



1. A micro-marking label to be applied to articles for identification, comprising:

a micro-sized plate of such size so as to be substantially invisible to casual observation when juxtaposed with the article to be identified;

identification indicia comprising a plurality of adjacent digital areas generally arranged about the periphery of an exposed surface of said plate, with each of said digital areas being precharacterized in one of a first optical condition and a second optical condition for identifying a digital bit of data; and

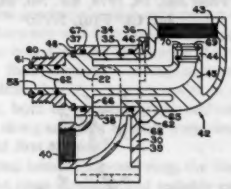
a substantially transparent sealant coupled over said exposed surface of said plate and onto the article to be identified for covering and sealing said plate, with said exposed surface visible, to the adjacent surface of the article to be identified, whereby upon close examination said digital areas comprising said identification indicia upon said microsized plate may be sequentially interpreted in order to digitally decode the message thereon.

4,239,262

PUMP END SWIVEL FOR HOSE

Carroll P. Krupp, and Ivan T. Straga, both of Akron, Ohio, assignors to B. F. Goodrich, Akron, Ohio

Filed May 7, 1979, Ser. No. 36,719
Int. Cl.³ F16L 3/16, 39/04
U.S. Cl. 285—61 15 Claims



1. A pump end swivel for mounting on an island adjacent to a gasoline pump, said swivel having a base member, an elbow assembly mounted in said base member for rotation about a horizontal axis in a plane parallel to the side of the pump, said elbow assembly having one end connected to a coaxial hose for dispensing liquid fuel and collecting fuel vapors, said elbow assembly having an outer elbow member integral with an inner elbow member, said outer elbow cooperative with said inner elbow to define an annular passageway for the passage of vapor, said inner elbow having a passageway for the passage of fuel, and an abutment means mounted on said elbow assembly cooperative with stop means on said base member for limiting the rotative movement of said elbow assembly relative to said base member.

4,239,263

SPHERICAL CONNECTOR HAVING INTEGRALLY FORMED OUTLETS

Henry H. George, Louisville, Ky., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Jan. 18, 1979, Ser. No. 4,250
Int. Cl.³ F16L 41/00
U.S. Cl. 285—150 5 Claims

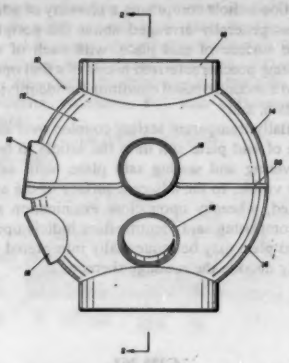
1. A structural fitting for connecting tubular members, said fitting including:

a hollow spherical body comprising a pair of hollow hemispherical members joined at their bases,

there being a circular line of attachment defined by the intersection of said bases; and

at least a pair of tubular protuberances integrally formed

from the wall of said body and extending radially outwardly therefrom,



one of said protuberances passing through said line of attachment.

4,239,264

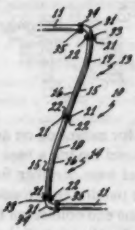
THERMAL EXPANSION JOINT FOR PIPES

Karl K. Evans, 8439 San Gabriel Ave., South Gate, Calif. 90280

Filed Jun. 14, 1979, Ser. No. 48,345

Int. Cl.[3] F16L 51/00

U.S. Cl. 285—173 4 Claims



1. In a pipe line formed in two lengths, an expansion joint comprising:

a pipe section having a wall made of two semi-cylindrical metallic wall parts wherein one wall part is made of a metal having a higher coefficient of thermal expansion than the coefficient of thermal expansion of the metal forming the other wall part;

an elbow coupled at each end of said pipe section;

one of said elbows being coupled to one of said lengths of said pipe line so that said section forms an angle with said one length and the metal with the higher thermal coefficient of expansion is disposed on the outside of said one elbow; and

the other of said elbows being coupled to the other length of said pipe length pipe line and also to said pipe section.

4,239,265

ATTACHMENTS FOR PIPES

Lloyd H. King, Sr., 311 Blake Rd., Hopkins, Minn. 55343

Filed Sep. 15, 1978, Ser. No. 942,648

Int. Cl.[3] F16L 41/04

U.S. Cl. 285—197 2 Claims

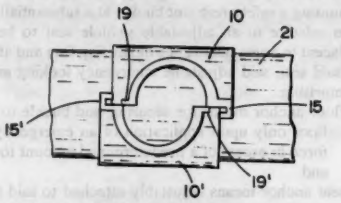
1. A branch connector for forming a branch line to a primary tubing without cutting of the primary tubing comprising:

a first mating member having a surface for engaging a portion of a primary tubing, said first mating member having a general rectangular shape with a first corner and a second corner located on one side of said surface for engaging a portion of the primary tubing and a third corner and a fourth corner located on the opposite side of said surface for engaging a portion of the primary tubing, a first lip located on said first corner, a second lip located on said second corner, a third lip located on said third corner and a fourth lip located on said fourth corner, said first mating member having a second surface thereon for engaging an insert;

a second mating member having a surface for engaging a further portion of the primary tubing, said second mating member having a general rectangular shape with a first corner and a second corner located on one side of said surface for engaging a further portion of the primary tubing and a third corner and a fourth corner located on the opposite side of said surface for engaging a further portion of the primary tubing, said second mating member having a first lip located on said first corner, a second lip located on said second corner, a third lip located on said third corner and a fourth lip located on said fourth corner;

said second mating member having a second surface thereon for engaging an insert;

said second surface of said first mating member having a



threaded surface thereon and said second surface of said second mating member having a threaded surface thereon, each of said threaded surfaces having a thread thereon with at least a double pitch so that when said first mating member is assembled to said second mating member said lips on said first mating member and said lips on said second mating member coact to hold said first mating member to said second mating member to thereby produce a threaded recess operable for engaging a threaded insert; a threaded insert having threads having the same pitch as the threaded recess formed by coaction of said second surface of said first mating member and said second surface on said second mating member, said threaded insert operable for insertion into said threaded recess;

said first mating member and said second mating member operable for forming engagement to a primary tubing through coaction of said first lip, said second lip, said third lip and said fourth lip on said first mating member to said first lip, said second lip, said third lip and said fourth lip on said second mating member; whereby said mating members are identical and the coaction to produce said engagement is provided by sliding interaction of said lips on said first mating member with said lips on said second mating member.

4,239,266

PIPE CONNECTOR APPARATUS

Charles R. Mynhier, Houston, Tex., assignor to Bill B. Berryhill, Bellaire, Tex.

Filed Jan. 16, 1978, Ser. No. 869,821

Int. Cl.[3] F16L 21/04

U.S. Cl. 285—323 21 Claims

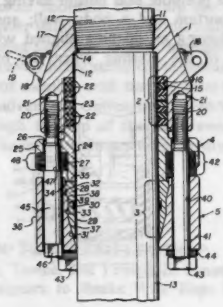
1. Apparatus for connecting a cylindrical first member to a second member comprising:

tubular body means adapted to receive one end of said first

member and having means for connecting said body means to said second member;

gripping means carried by said body means and movable from a radially expanded position, in which said one end of said first member may be axially received by and displaced from said body means, to a radially contracted position gripping the exterior of said first member and preventing its axial displacement from said body means;

annular seal means carried by said body means and movable from a relaxed position, in which said one end of said first member may be axially received therein, to a compressed position, sealingly engaging said one end of said first member; and



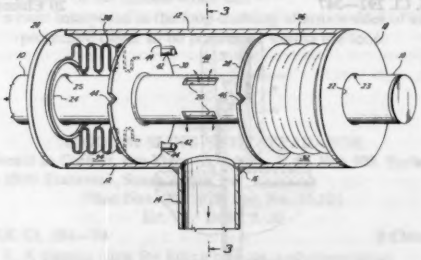
an actuating assembly carried by said body means, including a gripper load ring engageable with said gripping means and axially movable relative to said body means for moving said gripping means to said contracted position, and including a seal load ring engageable with said seal means and axially movable relative to said body means for moving said seal means to said compressed position; said actuating assembly including first actuating means for simultaneously applying axial forces to said gripper load ring and said seal load ring for effecting said axial movements thereof and second actuating means for applying axial forces to said seal load ring without applying axial forces to said gripper load ring.

4,239,267

INTERNAL-BELLOWS, PRESSURE-BALANCED, ANGLED-FLOWPATH EXPANSION JOINT

Roger D. Hudson, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 10, 1979, Ser. No. 74,179
Int. Cl.³ F16L *51/02*
U.S. Cl. 285—228 **4 Claims**



1. An internal-bellows, pressure-balanced, angled-flowpath expansion joint which comprises:

a first conduit member closed off at one end and having flow slots cut in said member near its closed end so that fluid can pass from the interior of said member to its exterior or from its exterior to its interior;

a second conduit member of larger diameter than the first conduit member and fitted around said first conduit member, said second conduit member being concentric with said first conduit member, both ends of said second conduit member extending past the flow slots cut in said first conduit member, but each end member being on opposite sides of the flow slots and the end nearer the closed end of said first conduit member not extending past said closed-end;

a third conduit member extending from said second conduit at a definite discrete angle, said third conduit being in fluid communication with the interior of said first conduit through a hole cut in the wall of said second conduit and the flow slots cut in said first conduit so that there can be free flow of a fluid between said first conduit member and said third conduit member, said third conduit being rigidly and sealably connected to said second conduit around the hole cut in said second conduit;

a first and a second annular end member, the first annular end member being rigidly and sealably connected at or near that end of said second conduit member which is closest to the closed-off end of said first conduit member and the second annular end member being connected at or near that end of said second conduit member which is furthest away from the closed-off end of said first conduit member, both of said annular end members extending sufficiently inward from said second conduit member toward said first conduit member until only a small annular gap is left between said first conduit member and each of said annular end members to provide slow controlled leak paths for fluid normally flowing between said first and third conduits should a rupture occur in the bellows defined below, both of which annular end members are axially spaced along said first conduit away from the flow slots cut in said first conduit;

a first and a second annular support ring, the first of which annular support rings is rigidly and sealably connected to and around said first conduit member between the flow slots cut in said first conduit and said first end member, a space being left between said first end member and said first support ring,

the second of which annular support rings is rigidly and sealably connected to and around said first conduit member between the flow slots cut in said first conduit member and said second end member, a space being left between said second support ring and said second end member,

both of said annular support rings extending outwardly from said first conduit member until they contact the interior wall of said second conduit member and provide slidable contact surfaces for movement of said first conduit member with respect to said second conduit member;

a first annular flexible bellows fitted in the annular space defined by said first and second conduits, said first annular end member, and said first annular support ring, with one end of said first annular bellows connected to said first annular end member and the other end connected to said first annular support ring so that pressurized fluid normally flowing between said first and third conduits which leaks past said slidable contacting surface formed between the external annular surface of said first annular support ring and the internal surface of said second conduit member will pressurize the external surface of said first annular bellows rather than its internal surface;

a second annular flexible bellows fitted in the annular space defined by said first conduit, said second conduit, said second annular end member, and said second annular ring support; one end of said second annular flexible bellows being connected to said second annular end member and the other end connected to said second annular support ring so that any pressurized fluid normally flowing between said first and third conduits which leaks past the slidable contacting surface formed between the interior

surface of said second conduit and the external annular surface of said second annular support ring will pressurize the external surface of said second bellows as opposed to its internal surfaces.

4,239,268

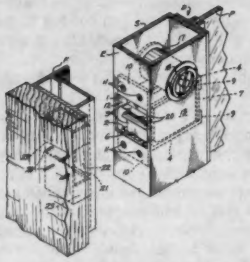
SLIDING DOOR LOCK

Harlan H. Rider, 10502 - 203 Ave. East, Sumner, Wash. 98390

Continuation-in-part of Ser. No. 832,737, Sep. 12, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,307

Int. Cl.³ E05B *65/08*; E05C *5/00*

U.S. Cl. 292—5 **23 Claims**



1. Locking mechanism for a closure member openable relative to a frame member, such members having respective normally registered apertures in corresponding edges thereof, said locking mechanism comprising:

bolt means carried by one of the members and having an outer end portion movable through the member edge apertures between a projected position in which said bolt means bridges between the members and a retracted position in which the bolt means does not bridge between the members;

an elongated latch leaf carried by the bolt-carrying member adjacent to the edge aperture of such member for swinging transversely of the length of said latch leaf through the member edge apertures and having an inner face normally disposed in the path of movement of said bolt means outer end portion, said latch leaf having a latch flange movable by swinging of said latch leaf from an unlocked position in which said latch flange is positioned inward of the face of the apertured edge of the bolt-carrying member to a locking position in which said flange is projected outward beyond the apertured edge of the bolt-carrying member and engages behind an edge of the aperture in the other member for locking the closure member to the frame member;

pivot pin means mounting said latch leaf for swinging about and axis stationary relative to the bolt-carrying member, said pivot pin means being located inward of the face of the apertured edge of the bolt-carrying member; and

means for moving said bolt means from retracted position to butt said outer end portion of said bolt means against said inner face of said latch leaf and swing said latch leaf latch flange to locking position and for moving said bolt means outer end portion to projected position bridging between the two members.

4,239,269

LUGGAGE LOCK

Chih-Chang Chiang, 2nd Floor, 38, Nanking West Rd., Taipei, Taiwan

Filed Jan. 2, 1979, Ser. No. 244

Int. Cl.³ E05C *1/10*

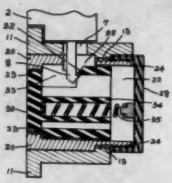
U.S. Cl. 292—175 **6 Claims**

1. A luggage lock for locking together the two shells of a luggage case, said lock comprising:

(a) a housing having a front end portion, a rear end portion and a body wall interconnecting said front and rear end portions; said housing formed having a first opening extending from said front end portion to said rear end portion, and a second opening forming in said body wall and interconnecting with said first opening; said housing adapted to be received within an opening in one of the luggage case shells;

(b) closure means removably mounted on the rear end portion of said housing when the housing is positioned in the luggage case shell for securing said housing in its mounted position;

(c) a button member reciprocally mounted within said housing for movement between a retracted position and a projected position; said button having a front finger engaging portion and a body wall; and said body wall formed having an opening aligned with the body wall opening of the housing when the button is mounted therein;



(d) a spring member extending between said button member and said closure means for urging said button in the direction of the retracted position thereof;

(e) a hook adapted to be mounted on the other one of the luggage case shells and positioned with its hook end projecting through the aligned openings in said housing and said button body walls when the luggage case is closed; and

(f) a portion of the button body wall defining the rear edge of said body wall opening projecting into the path of travel of said hook whereby said hook end engages and overlies said edge portion when the luggage case is closed to fasten said lock, and wherein said lock is unfastened by displacing said button to its projected position, against the action of said spring, to disengage said hook end from said edge portion to permit the luggage case to be opened.

4,239,270

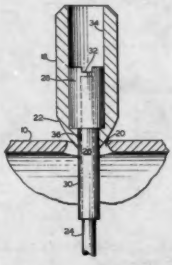
KEY-REMINDER AUTOMOTIVE DOOR LOCKING SYSTEM

Thomas L. Bridges, Box 345 Mohonk Rd., High Falls, N.Y. 12440

Filed Aug. 3, 1978, Ser. No. 930,735

Int. Cl.³ E05C *21/00*

U.S. Cl. 292—347 **20 Claims**



1. In an improved locking of the type having a door lock

mounted in a door casing, said door lock being of the type having a rod operable between an advanced and a retracted position through an aperture in the door casing, the improvement comprising:

a knob having a top and a bottom and having outside dimensions larger in size, at least near its bottom, than the casing aperture so as to substantially prevent its entry into the casing, and also having a bore therein for receiving a connector member, said bore having a cavity communicating with a relatively narrower channel opening at the bottom of the knob, said cavity having an opening at the top of the knob so as to provide access to the interior of the knob; and

a connector member slideably fit within the cavity, said connector member being attached to the rod through the channel, but being too large to pass therethrough,

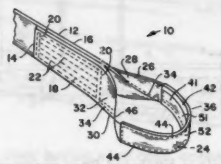
the depth of the cavity being sufficient to permit movement of the connector member with the rod from its retracted position to its advanced position without protruding substantially through the top of the knob even when the bottom of the knob is in contact with the door casing.

4,239,271

LOOP FOR FLEXIBLE STRAP

Delbert E. Beasley, Tampa, and Francis E. Jones, Riverview, both of Fla., assignors to Banks Wire Rope Slings, Inc., Tampa, Fla.

Filed Nov. 27, 1978, Ser. No. 963,820
Int. Cl.³ B66C *1/18*
U.S. Cl. 294—74 **11 Claims**



1. A reversible protected loop for a flexible strap, comprising in combination:

first means for securing the terminal end of the flexible strap to an adjacent area of the flexible strap creating the loop thereby;

second means for securing a fold of the flexible strap within the loop thereby creating a folded region of increased strap thickness and decreased strap width;

a protective cover completely encompassing said folded region of the flexible strap; and

a twist interposed in the loop enabling alternate sides of said protective cover to be positioned within the loop.

4,239,272

RIGGING SLING WITH SEPARATOR

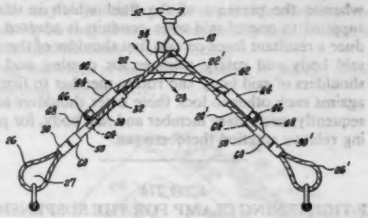
Gerald L. Corbett, c/o Fluor So. Africa, P. O. Box 505, Springs 1560 Transvaal, South Africa

Filed Nov. 20, 1979, Ser. No. 96,031
Int. Cl.³ B66C *1/20*
U.S. Cl. 294—74 **9 Claims**

1. A rigging sling for lifting objects, and comprising:

first and second lifting cables, each having eye means at each end for connection to a hook or the like;

first and second sleeves, with said first sleeve slidably carried on said first cable between said eye means thereof and with said second sleeve slidably carried on said second cable between said eye means thereof; and



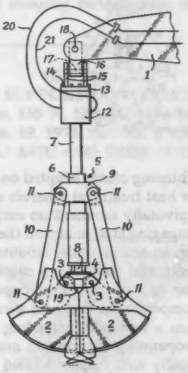
a third cable connected at one end of said first sleeve and at the other end of said second sleeve.

4,239,273

DEVICE FOR THE ROTARY ASSEMBLY OF A MEMBER CONTROLLED BY PRESSURIZED FLUID

Gerard P. Dodemont, Crepy en Valois, and Christian H. Viallefont, Meaux, both of France, assignors to Poclain, France

Filed Nov. 29, 1978, Ser. No. 964,719
Claims priority, application France, Dec. 6, 1977, 77 36747
Int. Cl.³ B66C *1/00*
U.S. Cl. 294—88 **11 Claims**



1. A device for controlling the operation of a tool member by pressurized fluid comprising:

a body having at least first and second shoulders and two main conduits adapted to be selectively supplied with said pressurized fluid;

a rotary member adapted to rotate with respect to said body and having first and second shoulders disposed in opposing relation to said first and second shoulders, respectively, of said body for maintaining said rotary member in an axial position with respect to said body, said rotary member including two inner pipes for conveying said pressurized fluid to control the tool member;

two circular grooves disposed between the rotary member and the body, with at least one of said inner pipes and one of said main conduits opening into one of the two circular grooves, and the other main conduit opening into the other circular groove;

a shuttle valve having two inlet connections and an outlet connection; and

an inner conduit disposed in one of said body and rotary member and including a first portion which connects a first of the two main conduits to a first of the two inlet connections of the shuttle valve, a second portion which connects the second of the main conduits to the second of

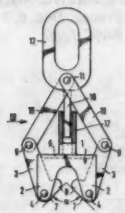
the two inlet connections of said shuttle value, and a third portion which connects said first shoulder of said one of said body and rotary member in which said inner conduit is disposed to the outlet connection of the shuttle valve, wherein the pressure of the fluid which is selectively supplied to one of said main conduits is adapted to produce a resultant force on said first shoulder of the other of said body and rotary member for causing said second shoulders of said body and rotary member to firmly abut against each other to lock these latter shoulders and consequently, said rotary member and said body, for preventing relative rotation therebetween.

4,239,274

SELF-TIGHTENING CLAMP FOR THE SUSPENSION OF GLASS SHEETS

Waldemar Linberg, Herzogenrath; Mario Roth, and Hans-Peter Siemonsen, both of Aachen, all of Fed. Rep. of Germany, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

Filed Jun. 12, 1979, Ser. No. 47,695
Claims priority, application France, Jun. 15, 1978, 78 17910
Int. Cl.³ B66C *1/48*
U.S. Cl. 294—114 **5 Claims**



1. In a self-tightening clamp adapted on closure to suspend a sheet of glass for heat treatment wherein said clamp includes a stirrup, a lever pivotally mounted on each end of said stirrup having a sheet engaging stud at an end thereof above the pivot point of the lever, an arm pivotally mounted on the end of each said lever opposite said stud, and a suspension link pivotally connected to the end of each arm opposite said lever; the improvement comprising in that said stirrup and said suspension link each has a vertically extending guide member with the members cooperating together to assure that said stirrup may move vertically with respect to said suspension link during opening and closing of said clamp, in having stops associated with said stirrup which limit pivotal movement of the levers and associated studs towards each other whereby said studs on a complete closure of the clamp are spaced apart slightly less than the thickness of a glass sheet which they are adapted to engage, and wherein the lower flanks of the studs in the position limited by the stops form an angle less than 120° with respect to each other.

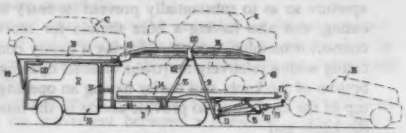
4,239,275

VEHICLE TRANSPORTER

David C. Horneys, Shippensburg, and Gerald L. Pool, Greencastle, both of Pa., assignors to Jerr-Dan Corporation, Greencastle, Pa.

Filed Mar. 5, 1979, Ser. No. 17,199
Int. Cl.³ B60J *9/00*
U.S. Cl. 414—478 **16 Claims**

1. A vehicle transporter comprising a mobile support having a normally level frame, a horizontally extensible and retractable lower deck on said frame and being tiltable to an inclined position relative to said frame following horizontal extension of the lower deck, an adjustable ground-engaging stabilizing means on said frame to support the lower deck during its horizontal extension and to allow tilting of the lower deck to said inclined position following said extension, a support structure rising from said frame to an elevation substantially above the lower deck, an upper deck above the lower deck and having its forward end pivoted to said support structure, power means interconnecting said frame and upper deck and operable to elevate the upper deck to an inclined position



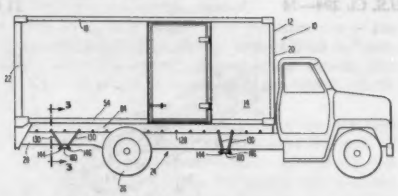
above the pivotal connection of the upper deck with said support structure and also operable to lower the upper deck to an inclined position below said pivotal connection, whereby the rear end of the upper deck may rest upon and be supported by the lower deck when the latter is in its inclined position, the lower and upper decks then forming a substantially continuous inclined ramp for vehicles.

4,239,276

TRUCK BODY FLOOR CONSTRUCTION AND TIE-DOWN MEANS

William A. Bertolini, 115-65 Undercliff Ter., Kinnelon, N.J. 07405

Filed Mar. 20, 1978, Ser. No. 887,948
Int. Cl.³ B60R *27/00*
U.S. Cl. 296—37.6 **10 Claims**



1. In a vehicle, a combined floor construction and tie-down means comprising lower longitudinal side rails, longitudinal floor boards extending transversely of the body and secured to said side rails, a wheeled frame including longitudinal inboard frame rails, substantially Z-shaped members secured beneath said floor boards and resting on said frame rails, and means clamping said Z-shaped members to said frame rails wherein said clamping means includes longitudinally spaced holes provided in said Z-shaped members, substantially C-shaped bolts including upper portions extending through a pair of said holes on the same side of said Z-shaped members, said C-shaped bolts having lower portions extending beneath said frame rails, and means securing the lower ends of said C-shaped bolts so that said bolts pull said Z-shaped members against said frame rails and said C-shaped bolts extend at a downwardly converging angle relative to each other.

4,239,277

LID MOUNTINGS FOR AUTOMOBILE INTERIOR STORAGE CABINETS

Takaaki Oda, Musashi-murayama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 20, 1978, Ser. No. 971,443
Claims priority, application Japan, Jan. 13, 1978, 53/3136[U]
Int. Cl.³ B60R *5/00*
U.S. Cl. 296—37.12 **7 Claims**

1. Automobile interior storage cabinet comprising
a body of the cabinet defining an opening,
a lid hingedly mounted on the cabinet body to cover the

opening and adapted to be releasably held in a closed position,

stop means for stopping the turning movement of the lid in an open position,

means biasing the lid toward the closed position, and

a lost motion connection between the lid and the biasing means for rendering the biasing means active on the lid only after the lid turns toward the open position exceeding a predetermined angular position.

4,239,278

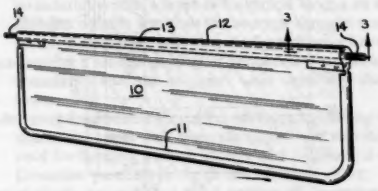
VEHICLE SUN VISOR

Robert T. Skilliter, Jr., Genoa, Ohio, assignor to The ACME Specialty Manufacturing Co., Toledo, Ohio

Continuation-in-part of Ser. No. 776,259, Mar. 10, 1977, abandoned. This application Jan. 26, 1979, Ser. No. 6,888

Int. Cl.³ B60J *3/00*

U.S. Cl. 296—97 F **6 Claims**



1. A vehicle sun visor having a top edge, opposed side edges and a lower edge, said visor to be interposed between the vehicle operator and a light source, comprising a tinted transparent flat panel molded from a resinous material, said panel having an enlarged and substantially transparent bead of the same material formed integrally therewith, said bead extending substantially along the entire periphery of said panel said enlarged bead extending across the entire lower edge preventing said lower edge from acting as a cutting edge, a rod encapsulated integrally within the bead along said top edge of said panel to reinforce said panel, said rod extending from a point adjacent one side edge to a point adjacent said opposed side edge, whereby said encapsulated rod gives structural strength across the entire top edge of said panel, and means for mounting said sun visor to a vehicle.

4,239,279

VEHICLE ROOF COVERING INSTALLATION

Albert J. Gonas, Grosse Pointe; Marvin A. Packett, Detroit, and Donald A. Street, Royal Oak, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 792,652, May 2, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 936,767

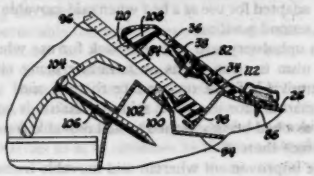
Int. Cl.³ B62D *25/06*

U.S. Cl. 296—210 **5 Claims**

1. Method of installing a flexible sheet roof covering on a vehicle body having a roof structure including a roof panel and laterally spaced sail panels, comprising the steps of:

preforming a first substrate panel to a shape conforming to one of the sail panels and a portion of the roof panel and a second substrate panel to a shape conforming to the other sail panel and a portion of the roof panel, said first and second substrate panels having edge portions adapted for mating overlap by which the first and second substrate panels may be joined together to provide a substrate panel assembly having an extent substantially equal to the extent of the flexible sheet roof covering;

gauging the width of the lateral spacing of the sail panels of a selected vehicle body;



joining the edge portions of the first and second substrate panels to provide a substrate assembly having a width gauged to the lateral spacing of the sail panels of the selected vehicle body to provide an assembled substrate sized to precisely overlie the roof and sail panels of the selected vehicle body;

adhesively securing the flexible sheet roof covering on the substrate assembly;

and mounting and securing the substrate assembly on the vehicle body.

4,239,280

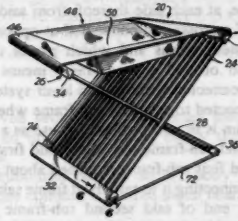
FOLDING SUPPORT CONSTRUCTION

Mitchell N. Ackerman, 155 W. 13th St., New York, N.Y. 10011

Filed Jan. 19, 1978, Ser. No. 870,920

Int. Cl.³ A47C *4/00*; F16M *11/32*

U.S. Cl. 297—18 **7 Claims**



1. A folding support comprising first and second arrays, said arrays including a pair of end pieces and elongated members extending between and joined to said end pieces, the members of said first array being interdigitated with the members of said second array, said interdigitated members being free to slide with respect to each other, object supporting means joined to one end piece of each said first and second arrays and means for defining the angle between each said array, said end pieces being positioned non-parallel to each other by said angle defining means.

4,239,281

CHAIR OR SOFA CONVERTIBLE INTO A BED

Sebastiano Luca', Barba, Italy, assignor to Lukas Beddy di Luca Sebastiano & C.S.a.s., Barba, Italy

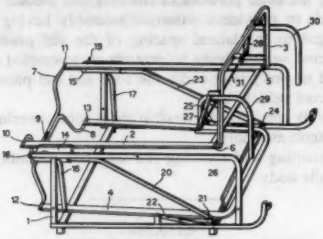
Filed May 1, 1979, Ser. No. 35,046

Int. Cl.² A47C *17/10*

U.S. Cl. 297—108 **4 Claims**

1. In a mechanism for an armchair or couch convertible into a bed, of the type including

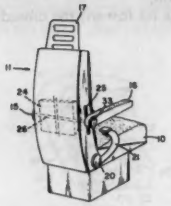
a fixed support frame,
an articulated movable frame,
pivotal attachment means pivotally attaching said movable frame to said fixed support frame, said pivotal attachment means permitting said movable frame to rotate thereabout between a first end position above said fixed frame and a second end position to one side of said fixed frame, said mechanism being adapted for use as a chair or couch when said movable frame is in said first position and being adapted for use as a bed when said movable frame is in said second position,
an upholstery seat and seat back for use when said mechanism is arranged as an armchair being attached to said movable frame on one face thereof, and
a mattress for use when said mechanism is arranged for use as a bed being attached to said movable frame on the other face thereof,
the improvement wherein said movable frame includes first and second sub-frames,



main pivot means pivotally mounting said first sub-frame at one end thereof to said fixed frame,
lever means suspending one end of said second sub-frame, at each side thereof, from said first sub-frame, and
lever system means suspending the other end of said second sub-frame, at each side thereof, from said fixed frame by means of a crosspiece connected at opposite ends to said lever system means and which passes underneath said other end of said second frame means without being fixedly connected thereto, said lever system means being also connected to said first sub-frame whereby when said mechanism is in said position for use as a chair or couch said second sub-frame lies below said first sub-frame and when said first sub-frame is turned about said main pivot means connecting it to said fixed frame said lever means at said first end of said second sub-frame and said lever means at said other end of said second sub-frame operate to raise said second sub-frame to a position substantially level with the said first sub-frame and coplanar therewith.

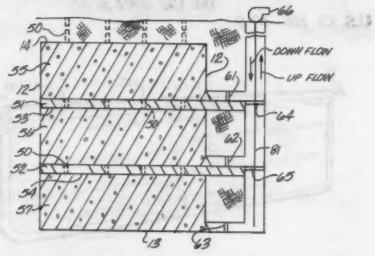
4,239,282
PILOT SEAT
Thomas H. White, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Dec. 18, 1978, Ser. No. 970,725
Int. Cl.[2] A47C *7/46, 7/54*
U.S. Cl. 297—284 **9 Claims**

1. A seat assembly particularly adapted for a pilot comprising:
(a) a seat portion;
(b) a backrest;
(c) a pair of armrests;
(d) said backrest having a separately adjustable lumbar support;
(e) said armrests being interconnected to said lumbar support for unison adjustment therewith, relative to said backrest;



(f) unitary adjustment means coupled to both said armrests and said lumbar support for simultaneously raising or lowering said armrests and said lumbar support.

4,239,283
IN SITU OIL SHALE RETORT WITH INTERMEDIATE GAS CONTROL
Richard D. Ridley, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.
Filed Mar. 5, 1979, Ser. No. 17,348
Int. Cl.[3] E21B *43/247*; E21C *41/10*
U.S. Cl. 299—2 **44 Claims**



20. A method for forming an in situ oil shale retort in a subterranean formation containing oil shale and having a plurality of strata of formation extending through a retort site, at least one stratum of formation having a relatively lower kerogen content than the average kerogen content of formation within the retort site, the method comprising the steps of:
forming a plurality of vertically extending holes through a portion of the subterranean formation within the retort site; and
forming at least an upper and a lower fragmented permeable mass of formation particles containing oil shale within the retort site, leaving between the upper and lower fragmented masses an intervening zone of unfragmented formation containing at least one stratum of formation having a relatively lower kerogen content than the average kerogen content of formation within the retort site, said zone of unfragmented formation having a plurality of such vertically extending holes for distributing fluid from the upper fragmented mass directly into the lower fragmented mass.

40. An in situ oil shale retort in a subterranean formation containing oil shale comprising:
a plurality of vertically spaced apart fragmented permeable masses of formation particles containing oil shale including an upper fragmented mass and at least one lower fragmented mass substantially directly below said upper fragmented mass and separated from said upper fragmented mass by a zone of unfragmented formation containing a plurality of vertically extending holes there-

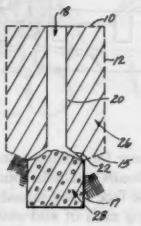
through for distributing fluid from the upper fragmented mass directly into the lower fragmented mass.

4,239,284

SITU RETORT WITH HIGH GRADE FRAGMENTED OIL SHALE ZONE ADJACENT THE LOWER BOUNDARY

Richard D. Ridley, and Robert J. Fernandes, both of Bakersfield, Calif., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Mar. 5, 1979, Ser. No. 17,432
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **18 Claims**



11. A method of forming an in situ oil shale retort in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, said fragmented mass having top, bottom and side boundaries, comprising the steps of:

excavating a first portion of formation from within such boundaries within a layer of formation having an average kerogen content less than the average kerogen content of the oil shale within such boundaries to form a lower void;

excavating a second portion of formation from within such boundaries to form an upper void vertically above the lower void;

dropping fragmented formation particles formed by excavation of the upper void from the upper void into the lower void for forming a lower moiety of a fragmented mass of formation particles in the in situ oil shale retort;

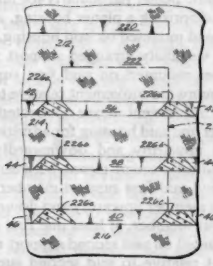
explosively expanding a third portion of formation within the boundaries of the retort toward such upper void for forming an upper moiety of the fragmented mass in the retort.

4,239,285

METHOD OF ATTENUATING AIRBLAST FROM DETONATING EXPLOSIVE IN AN IN SITU OIL SHALE RETORT

Gordon B. French, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation of Ser. No. 840,856, Oct. 11, 1977. This application Jun. 20, 1979, Ser. No. 50,425
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **41 Claims**



30. In a method for forming an in situ oil shale retort in a subterranean formation containing oil shale, in which at least one means for access is excavated to a retort site in the formation containing oil shale and at least one void is excavated in formation within the retort site, leaving a remaining portion of unfragmented formation within the retort site adjacent the void, and in which explosive is placed in such a portion of unfragmented formation and detonated to explosively expand such portion of unfragmented formation toward such a void for forming an in situ retort containing a fragmented permeable mass of formation particles containing oil shale, the improvement comprising the steps of:

providing a permeable barrier between such void and each means for access for reducing the effective transverse cross section of each means for access; and

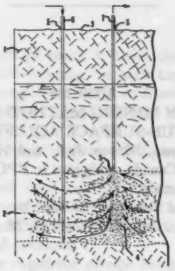
confining gas from such explosive expansion by limiting flow of such gas from the retort site by means of the smaller cross section available for gas flow through such a permeable barrier so as to attenuate airblast in each means for access.

4,239,286

IN SITU LEACHING OF ORE BODIES

David L. Coursen, Mercersburg, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 382,845, Jul. 26, 1973, abandoned. This application Feb. 6, 1975, Ser. No. 547,750
Int. Cl.³ E21B *43/28*; E21C *41/14*
U.S. Cl. 299—4 **23 Claims**



16. An improved process for recovering metal values by in-situ leaching an ore body located below the water table which comprises:

a. forming a rubblized zone in an ore body whereby the rubblized zone contains fractured metal bearing ore particles;

b. injecting a leach solution through one or more injection wells located in the ore body adjacent to but outside the rubblized zone, the leach solution solubilizing metal values in the ore body and in the rubblized zone; and

c. recovering a metal containing leach solution through one or more production wells located in the rubblized zone.

4,239,287

SOLUTION MINING POTASSIUM CHLORIDE FROM HEATED SUBTERRANEAN CAVITIES

Elmar L. Goldsmith, Regina, Canada, assignor to PPG Industries Canada, Ltd., Regina, Canada

Filed Feb. 1, 1979, Ser. No. 8,314
Int. Cl.² E21C *41/08*
U.S. Cl. 299—4 **17 Claims**

1. A method of solution mining potassium chloride from a cavity in a subterranean ore deposit containing potassium chloride and sodium chloride, in which cavity ore has been rubblized to effect a large contact surface area, comprising:

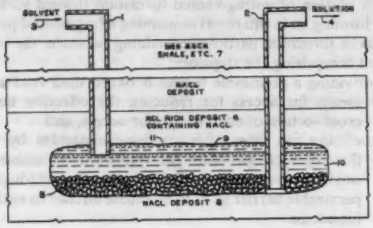
A. solution mining the ore rubble at a first temperature for a

time sufficient to determine the mining rate for that temperature;

B. adjusting the temperature of the cavity solution to a temperature determined to be near the highest temperature, based on the surface area calculated from the mining rate at the first temperature, at which the invariant composition is achievable at the solvent dissolving rate at the adjusted temperature;

C. solution mining the ore near the adjusted temperature; and

D. withdrawing solution near the invariant composition of the adjusted temperature.

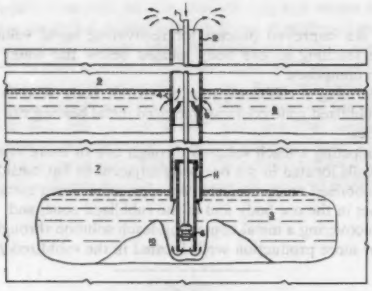


4,239,288

SOLUTION MINING METHOD UTILIZING SUB-SURFACE AQUIFER

Robert E. Thompson, Moose Jaw, and Henry A. Antemuik, Regina, both of Canada, assignors to PPG Industries Canada, Ltd., Regina, Canada

Filed Feb. 1, 1979, Ser. No. 8,449
Int. Cl.[2] E21B *43/28*
U.S. Cl. 299—5 **10 Claims**



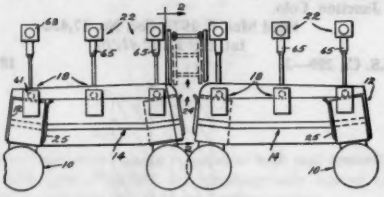
1. In the method of solution mining a mineral from a subterranean deposit thereof by introducing into the deposit an aqueous solvent and withdrawing from the deposit through a conduit a solution richer in the mineral and wherein above the deposit is a water bearing formation traversed by the conduit, an improvement comprising establishing through the wall of the conduit communication between the water bearing formation and the conduit and creating a pressure differential across that wall of the conduit to effect dilution of the solution being withdrawn, thereby avoiding plugging of the conduit caused by precipitation of the mineral.

4,239,289

MANEUVERABLE FULL FACE MINER

James C. Justice, and Frank A. Delli-Gatti, both of Beckley, W. Va., assignors to Coaltex, Incorporated, Beckley, W. Va.

Filed Mar. 14, 1979, Ser. No. 20,492
Int. Cl.[3] E21C *25/52*
U.S. Cl. 299—18 **15 Claims**



1. A full face miner for mining a seam, comprising

a pair of cutting heads rotatable about axes spaced from each other along the face being mined;

means for rotating each of said cutting heads axis to effect cutting;

means for mounting said cutting heads for reciprocal longitudinal movement toward and away from each other, to effect shearing, along the face being mined;

means for moving said cutting heads on said mounting means in reciprocal longitudinal movement to effect shearing;

means for supporting the roof of the cut seam and for anchoring said mounting means in stationary position within the seam during reciprocal movement of said cutting heads with respect to said mounting means;

means for sumping said cutting heads; and

means for conveying cut material away from the face to be mined, said conveying means comprising means for conveying cut material along the face being mined, and means for conveying cut material away from and perpendicular to the face being mined; said means for conveying cut material along the face being mined consisting essentially of a plow operatively mounted to and longitudinally movable with each of said cutting heads.

4,239,290

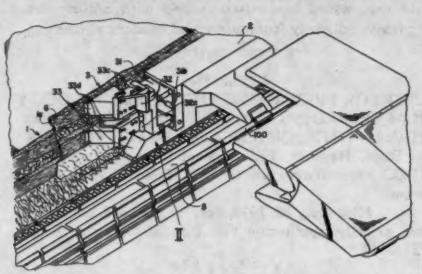
HYDROMECHANICAL PLANER WITH CUTTING AND BREAKING HEADS

Heinrich Goris, Hamminkeln; Roland Günther, Wesel; Kurt Ogorek, Oberhausen, and Karl-Heinz Schwarting, Voerde, all of Fed. Rep. of Germany, assignors to Gutehoffnungshütte Sterkrade Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 56,842
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832319
Int. Cl.[3] E21C *27/34, 25/60*
U.S. Cl. 299—34 **19 Claims**

1. A hydromatic planer particularly for mining materials in a mining seam, comprising a planer housing, at least one cutting and breaking head mounted on said housing, each head including a first and vertically arranged support member, a second support member mounted on said first support member for upward and downward movement relative to said first support member, a first adjustment means connected between said first support member and said housing for adjusting said cutting and breaking head upwardly and downwardly relative to said housing, second adjustment means between said second support member and said first support member for adjusting said second support member upwardly and downwardly relative to said first support member, at least one first cutting and breaking wedge mounted on said second support member for adjustable movement relative to said second support member and having a wedge shaped cutting edge disposed in a first plane

for engagement in the mining seam, and at least one second cutting and breaking wedge adjustably mounted on said first support member for movement relatively thereto having a wedge shaped cutting edge disposed in a second plane at substantially right angles to said first plane, and nozzle means associated with each of said first and second cutting and breaking wedges for directing a fluid stream against the seam to make an incision in the seam.

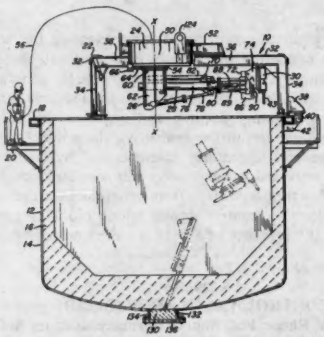


4,239,291

INDUSTRIAL METALLURGICAL DELINING ASSEMBLY

Lawrence Skendrovic, West Mifflin, Pa., assignor to William M. Bailey Company, Washington, Pa.

Filed Jun. 13, 1978, Ser. No. 914,998
Int. Cl.³ E21C *3/00*
U.S. Cl. 299—70 **16 Claims**



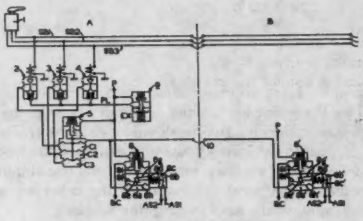
1. An industrial metallurgical delining assembly for dislodging and removing refractory or other material from upwardly open metallurgical process vessels comprising: frame supporting means adapted to be carried by such a vessel adjacent an upper end portion thereof; said frame supporting means including a plurality of transversely spaced generally vertically extending leg sections supporting a generally horizontally extending support section adjacent their upper ends thereby spacing said support section upwardly from the upper end of such a vessel; turntable means carried by said support section and having a boom support portion thereof depending thereunder and rotatable about a generally vertically extending axis; extensible and articulatory elongated boom means pivotally carried by said boom support portion adjacent one axial end thereof; work means carried by said boom means adjacent the free end thereof and operable to selectively carry dislodging means and removal means for the dislodging of such material and the subsequent removal thereof from such a vessel; said turntable means being cooperable with said boom means to provide access to substantially all interior portions of such a vessel as well as to the exterior thereof adjacent the upper end thereof for the dislodging and removal of such material from such a vessel; and the vertical spacing between the uppermost end of such vessel and said support section being sufficient to provide clearance for said removal means to remove such dislodged material between said leg sections and over the upper end portion of such vessel to a location outwardly from such vessel.

4,239,292

BRAKE GEAR FOR VEHICLES

Minoru Nagase, Kobe, Japan, assignor to The Nippon Air Brake Co., Ltd, Kobe, Japan

Filed Mar. 19, 1979, Ser. No. 21,741
Claims priority, application Japan, Apr. 7, 1978, 53-41482
Int. Cl.³ B60T *13/74*
U.S. Cl. 303—3 **5 Claims**



1. For use in a railway train, a brake control system for providing load-adaptive braking on each car of the train in accordance with the respective load condition of each car and an electric brake command signal effective at a single one of the cars comprising:

(a) a fluid pressure operable brake cylinder device on each said car;

(b) means associated with said single one of the cars for converting the electric brake command signal thereat to a corresponding fluid pressure brake command signal;

(c) a source of fluid pressure;

(d) a fluid pressure regulator device having an input connected to said source of fluid pressure and an output connected to said converting means for supplying thereto a predetermined level of fluid pressure, whereby said fluid pressure brake command signal is limited to a maximum value corresponding to said predetermined level of supply fluid pressure; and

(e) means associated with each car for pressurizing said brake cylinder device thereof in accordance with said fluid pressure brake command signal and the respective car load condition to provide said load-adaptive braking on each car.

4,239,293

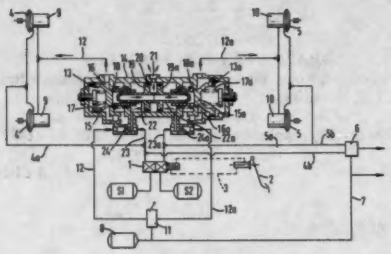
VEHICLE BRAKING SYSTEM WITH VALVING TO CONTROL SPRING APPLIED BRAKES AND FLUID ACTUATED SERVICE BRAKE UNITS

Wilbur M. Page, Lincoln, England, assignor to Clayton Dewandre Company Limited, Lincoln, England

Filed Mar. 20, 1979, Ser. No. 22,096
Claims priority, application United Kingdom, Mar. 22, 1978, 11398/78
Int. Cl.³ B60T *13/00*
U.S. Cl. 303—6 M **5 Claims**

1. A vehicle braking system of the kind incorporating two circuits serving driven and non-driven axles respectively in which both fluid actuated service brake units and spring brake units are provided on both axles, comprising a hand control valve for venting the spring brake units for braking purposes, driver operated fluid valve means for effecting actuation of the

fluid actuated units, and relay valve means operable on failure of the service braking in either circuit and responsive to the service pressure in the other circuit to provide a graduated actuation of the spring brake units in the circuit where service braking had failed, at least one of the spring brake on the driven axles and the relay valve means controlling operations



of such units, being so constructed as to attenuate the force applied by the spring brake units on the driven axle, the relay valve means comprising two relay valves each controlling the supply of fluid to the spring brake unit on one of the axles and operable, when the service pressure in the said one circuit fails, in response to the service pressure in the other circuit, to control venting of the associated spring brakes.

4,239,294

MOTORCYCLE HYDRAULIC BRAKE SYSTEM WITH BRAKE FORCE REGULATOR

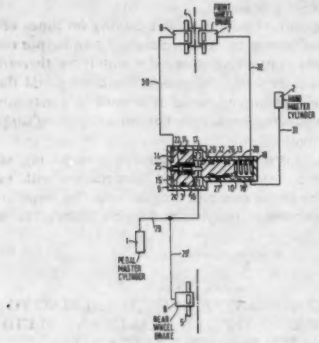
Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 26, 1979, Ser. No. 60,935

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837963

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **5 Claims**



1. A motorcycle hydraulic brake system having a brake force regulator comprising:

a first brake circuit having a pedal master cylinder connected directly to a rear wheel brake and acting through said regulator on a first brake caliper of dual-circuit front-wheel brake;

a second brake circuit having a hand master cylinder acting through said regulator on a second brake caliper of said front-wheel brake; and

said regulator includes

a pressure reducing valve disposed in said first brake circuit between said pedal master cylinder and said first brake caliper and controlled by pressure of said second brake circuit,

said reducing valve providing regulated pressure to said first brake caliper, and

said rear wheel brake is provided with non-regulated pressure directly from said pedal master cylinder.

4,239,295

CIRCUIT FOR PREVENTING THE WHEEL VELOCITY FROM EXCEEDING THE VEHICLE VELOCITY IN VEHICLES WITH ANTILOCKING BRAKE SYSTEMS

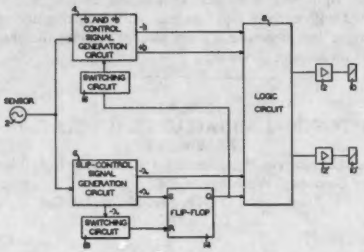
Konrad Rode, Hanover, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,661

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740419

Int. Cl.³ B60T *8/08*

U.S. Cl. 303—106 **2 Claims**



1. Switching circuit arrangement for preventing the wheel velocity from exceeding the vehicle velocity in an anti-skid vehicular braking system, a first threshold stage for generating deceleration and acceleration control signals, a second threshold stage for generating positive and negative slip control signals, and a logic circuit for evaluating the control signals controlling the brake pressure; characterized by, switching means being activated by a positive slip control signal for blocking the first threshold stage from generating the deceleration and acceleration control signals which blocking can be eliminated by the presence of a negative slip control signal.

4,239,296

CONTROL VALVE ASSEMBLIES

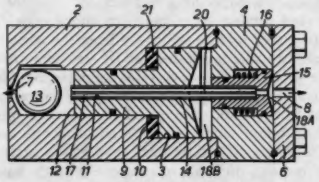
Manfred Kaub, Rhens, Fed. Rep. of Germany, assignor to Girling Limited, Birmingham, England

Filed May 9, 1979, Ser. No. 37,287

Claims priority, application United Kingdom, May 9, 1978, 18550/78

Int. Cl.³ B60T *8/00*

U.S. Cl. 303—24 A **5 Claims**



1. A control valve assembly for a vehicle braking system, comprising a housing having an inlet and an outlet, and a bore

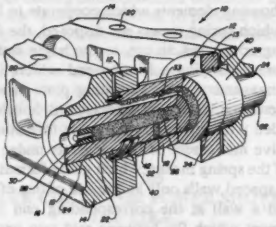
between said inlet and outlet, a valve controlling communication between said inlet and said outlet, a control piston movable in said bore, said valve having a valve seat carried by said control piston and an inertiaresponsive member movable into engagement with said valve seat to close said valve at a predetermined deceleration of the vehicle, and disabling means operable in response to the pressure at said outlet to hold said valve open, said disabling means comprising an auxiliary piston, a rod connected to said auxiliary piston, and resilient means biasing said auxiliary piston to an inoperative position, said auxiliary piston having stepped opposed faces subjected to outlet pressure and being movable, in response to a predetermined outlet pressure, against the force of the resilient means to cause said rod to hold said inertia-responsive member off said valve seat, said rod having therein a passageway which at all times permits the passage of fluid between chambers located on opposite sides of said auxiliary piston.

4,239,297

RADIAL FACE SEAL

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1978, Ser. No. 969,028
Int. Cl.³ B62D *55/20*; F16J *15/36*
U.S. Cl. 305—11 **12 Claims**



1. A seal (58) between two relatively rotatable piece parts (14,18), a cylindrically-shaped sealing ring (60) seated in a slot (72) in a facing surface (52) of one of said piece parts (14), a second cylindrically-shaped sealing ring (64) seated in a slot (74) in a facing surface (44) of the other of said piece parts (18), an inwardly flared lip (62) on the distal end of one of said sealing rings (60,64), an outwardly flared lip (66) on the distal end of the other of said sealing rings (60,64), and said outwardly flared lip (66) on said one sealing ring (60,64) sealingly engaging the inwardly flared lip (62) on said other sealing ring (60,64).

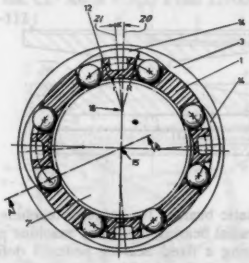
4,239,298

ROLLING BEARING FOR LINEAR MOVEMENT HAVING CAGE EXTENDING BEYOND OUTER SLEEVE

Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 7, 1978, Ser. No. 884,190
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711882
The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.
Int. Cl.³ F16C *31/06*
U.S. Cl. 308—6 C **9 Claims**

1. In a rolling bearing adapted for relative axial movement with respect to a shaft, and including a cage with axially extending pairs of first and second guideways for loaded and unloaded rolling elements respectively and circular reversing guideways at the axial ends of and interconnecting each pair of first and second guideways, to form continuous paths, endless rows of rolling elements in said paths, and outer sleeve surrounding said cage and having an axial length substantially equal to the lengths of said first and second guideways, whereby the ends of said cage having said reversing guideways project axially beyond said outer sleeve, and end rings mounted to radially outwardly cover said projecting ends; the improvement wherein the radially inward surfaces of said semicircular guideways, with respect to the axis of said bearing, are radially outwardly convex and said end rings have



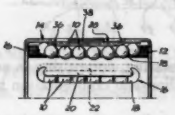
concave recesses in their inner surfaces and radially surrounding said semicircular guideways, the centers of curvature of said surfaces of each semicircular guideway and the corresponding recess of said end ring being on a common axis parallel to said bearing axis, the centers of said second guideways being displaced radially outwardly in said cage from the centers of said first guideways, whereby rolling elements in said second guideways are held out of contact with said shaft.

4,239,299

BALL BEARING FOR LINEAR MOTION

Alfred Hoffmann, Bilthoven, Netherlands; Carl Ullberg, Göteborg, Sweden; Hendrik Rekers, Nieuwegein, Netherlands; Horst M. Ernst, Eltingshausen, Fed. Rep. of Germany; Manfred Brandenstein, Aschfeld, Fed. Rep. of Germany; Armin Olschewski, Schweinfurt, Fed. Rep. of Germany; Toni Schulz, Dittelbrunn, Fed. Rep. of Germany, and Lothar Walter, Schweinfurt, Fed. Rep. of Germany, assignors to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Apr. 4, 1979, Ser. No. 26,589
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814371; Jul. 5, 1978, 2829499
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **14 Claims**



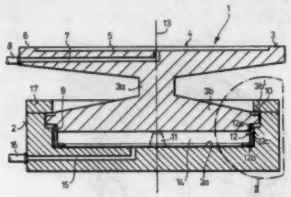
1. In a ball bearing for linear motion including a cage with oval guideways and an outer sleeve receiving said cage, said sleeve having parallel axially extending raceway sections with a transition at each end for receiving balls under load, each transition extending radially outwardly from the respective raceway section; the improvement wherein each transition has a radially weakened portion extending transversely of the respective raceway section.

4,239,300

HYDROSTATIC BEARING

Josef Adler, Nieder-Ramstadt, Fed. Rep. of Germany, assignor to Polysius AG, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,159
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805711
Int. Cl.³ F16C *17/06, 32/06, 39/04*
U.S. Cl. 308—9 20 Claims



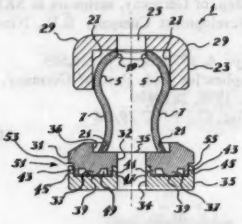
1. A hydrostatic bearing for rotating machine parts, more particularly a radial bearing for heavy machine parts, such as drums, comprising a fixed bearing pedestal defining an upwardly facing recess, a bearing shoe mounted in said recess for limited wobbling movement about a bearing axis extending upwardly through the recess of said bearing pedestal and for hydraulic adjustment relative to the rotating machine part, said bearing shoe including an upper surface defining a recess, and means for supplying the recess of said bearing shoe and the recess of said bearing pedestal with a hydraulic carrier medium, a hydraulically operable supporting membrane movably connecting said bearing shoe to said bearing pedestal about the recess of said bearing pedestal characterised in that the supporting membrane comprises an annular jacket zone which is deformable substantially parallel to the bearing axis.

4,239,301

FLEXIBLE SPRING BEARING

Hans U. Pannwitz, P.O. Box 67, Odessa, Fla. 33556

Continuation-in-part of Ser. No. 834,903, Sep. 20, 1977, Pat. No. 4,175,804. This application Apr. 25, 1979, Ser. No. 33,200
Int. Cl.³ F16C *21/00*
U.S. Cl. 308—35 23 Claims



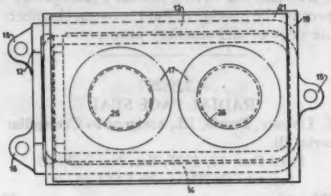
1. An improved bearing, comprising in combination:
a substantially cylindrical configuration having an aperture therein;
a main bearing race disposed at an end portion of said cylindrical configuration;
a thrust race disposed adjacent to said main bearing race;
bearing means interposed between said main bearing race and said thrust race enabling rotation therebetween;
said bearing means comprising a plurality of protrusions established concentric with said cylindrical configuration;
each of said plurality of protrusions being at least partially annular about said cylindrical configuration;
main bearing skirt means extending annularly from said main bearing race and concentric with said cylindrical configuration; and
thrust race skirt means extending annularly from said thrust race for cooperation with said main bearing skirt means for forming a rotatable seal therebetween.

4,239,302

SIDEBEARERS

Robert S. Morris, Cheltenham, England, assignor to Gloucester Railway Carriage & Wagon Company Limited, England

Filed Apr. 13, 1978, Ser. No. 896,339
Claims priority, application United Kingdom, Apr. 14, 1977, 15468/77
Int. Cl.³ H01H *1/50;* B61F *3/00*
U.S. Cl. 308—138 6 Claims



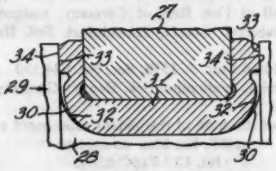
1. A sidebearer for a railway bogie vehicle, comprising first and second housing elements which cooperate to form a housing within which spring means are disposed, the first housing element being connected, in use, to the bogie and the second housing element carrying a friction pad which, in use, is biassed into engagement with a rubbing plate attached to the vehicle underframe, said first and second housing elements being provided with interengaging guide formations ensuring guided relative movement of the elements under and against the action of the spring means, which guide formations include two parallel spaced walls only at one end of one of the housing elements and a wall at the corresponding end of the other housing element which fits between said two parallel spaced walls as a close sliding fit, the two parallel walls being on said first housing element, the two parallel walls extending, in use, to positions adjacent the friction pad, whereby the positions of engagement between the walls are located in close proximity to the line of action of the drag forces applied, in use, to the friction pad.

4,239,303

FULL CONTACT CRANKSHAFT BEARING

Robert R. Backlin, Dolton, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 4, 1978, Ser. No. 965,945
Int. Cl.³ F16C *17/10, 3/06*
U.S. Cl. 308—167 10 Claims



1. A journal bearing comprising, a journal, two complementary bushing shells, said journal defining fillet radii to reduce the journal stress at the ends of said journal, fillet radii of smaller radii on said bushing shells providing a gradually increasing clearance between fillets from a lubricating oil film thickness on the axial journal surface to the radial portions of

the fillets, a restricted flow passage means defined by abutment surfaces located axially outwardly from the extreme radial portions of said bushing shell fillets for trapping oil to increase the bearing load carrying capacity substantially across the full width of said journal bearing.

4,239,304

BEARING SPLIT CAGE

Teruaki Wakunami, Sagamihara, Japan, assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 28, 1979, Ser. No. 24,611
Int. Cl.[3] F16C *33/50*
U.S. Cl. 308—217 4 Claims

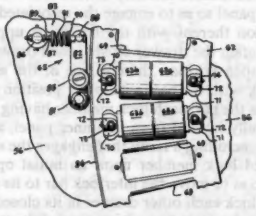
1. A roller bearing cage comprising: a pair of cage pieces, said cage pieces having interconnected connector means, each connector means being constructed to prevent the separation of the cage pieces and having at least one circumferential surface in slidable contact with at least one circumferential surface of the other connector means, said connector means also being constructed to permit limited relative circumferential movement of the cage pieces to permit the enlargement and reduction of the diameter of the cage.

4,239,305

LIVE ROLLER CIRCLE FOR POWER SHOVELS AND THE LIKE

George B. Baron, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 24, 1979, Ser. No. 6,553
Int. Cl.[3] F16C *19/30*
U.S. Cl. 308—222 3 Claims



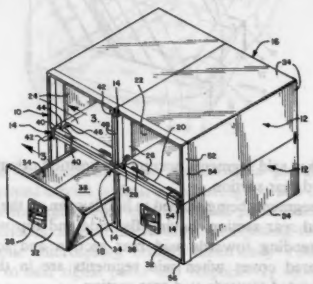
1. An improved live roller circle structure for a large heavy-duty machine, such as a power shovel, which is subject to large eccentric loads wherein said machine includes a lower frame, an upper frame rotatably mounted on said lower frame by said live roller circle, wherein said roller circle structure includes a lower rail mounted on said lower frame, said lower rail having a width which exceeds 5% of the mean diameter of said roller circle, a roller cage structure, a plurality of pins mounted on said roller cage structure, rollers mounted on said pins and supported in rolling contact with said lower rail and an upper rail mounted on said upper frame and supported on said rollers, said upper rail having a width substantially equal to that of said lower rail and wherein said roller circle is arranged with respect to said upper and lower frames and said eccentric load is of a value as to cause the center of gravity of the machine to travel beyond the diameter of said roller circle under normal operating conditions, said improved live roller circle further comprising: a set of at least two cylindrical rollers mounted on each pin of said roller cage structure of said live roller circle.

4,239,306

FILE FRAME

Gerald R. Klaus, St. Charles, Ill., assignor to Fellowes Manufacturing Company, Itasca, Ill.

Filed Nov. 27, 1978, Ser. No. 963,996
Int. Cl.[3] A47B *87/00;* F16B *12/00*
U.S. Cl. 312—111 8 Claims



1. An improved framed shell housing comprising, in combination:

a fiberboard shell having at least three side wall panels;

said side wall panels being formed with hingedly connected extension panels, folded inwardly so as to lie adjacent their respective side wall panels, said side wall panels and their respective extension panels forming forward edges about their hinged connections, and said forward edges of said side wall panels forming collectively an open end of said shell;

wherein said shell further includes a notch at each corner formed by said side wall panels at said open end of said shell; and

a continuous peripheral frame for said open end of said shell, said frame having substantially the same peripheral dimensions as a periphery of said shell defined by said side wall panels rearward of said open end, said frame including, in combination, a first and a second spaced-apart leg member, a base member, said base member interconnecting said leg members and thereby forming a channel, and a continuous rigid bar, said rigid bar being disposed within said channel adjacent said base member, said frame receiving said forward edges within said channel and said rigid bar being disposed between said base member and said forward edges.

4,239,307

STORAGE AND DEMONSTRATION DEVICE PARTICULARLY FOR CARD-TYPE DISPLAY OBJECTS

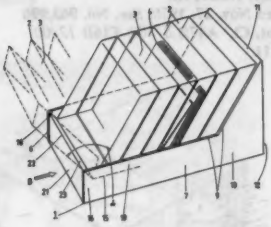
Eduard H. Schweizer, 5101 Boarsheed Rd., Minnetonka, Minn. 55343

Filed Aug. 25, 1978, Ser. No. 936,894
Claims priority, application Switzerland, Sep. 2, 1977, 10721/77
Int. Cl.[2] A47B *63/00*
U.S. Cl. 312—183 3 Claims

1. Storage and demonstration device for flat card-shaped display objects, comprising:

an oblique-angled rectangular closed container having a multiple segmented cover and a stand, said stand having a base section, a pair of parallel side panels, a front section and a rear section, each of said front and rear sections being provided with inclined support elements,

said cover being formed by a number of segments consecutively arranged at specific intervals between said front and rear sections and retained in said stand in such a manner that they can be tilted from a position oriented towards said rear section to a position oriented towards said front section and vice versa, said segments defining compartments for the objects, said compartments being closed



when said segments occupy the position oriented towards said rear section,

said segments being shaped as hoods open on the sides facing said rear section, having flat side and top wall sections extending towards said rear section and forming said closed cover when said segments are in the positions oriented towards said rear section.

4,239,308

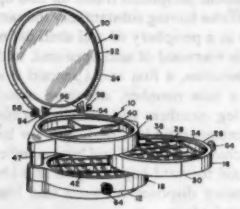
DISPLAY TRAY ASSEMBLY

Paul W. Bradley, 3740 Sioux Ave., San Diego, Calif. 92117

Filed Mar. 29, 1979, Ser. No. 25,281

Int. Cl.[3] A47B *47/00*

U.S. Cl. 312—201 **6 Claims**



1. A display tray assembly comprising:

a base,

at least two pivot posts adapted to be secured to and extend upwardly from said base,

at least two pivoting trays,

a first of said pivoting trays adapted for being supported on a first of said posts,

a second of said pivoting trays adapted for being supported by a second of said posts,

said pivoting trays comprising a generally ring-shaped wall supporting a removable tray and having a plurality of storage compartments,

said pivot post comprising means for supporting said pivoting trays at a predetermined height, and for supporting said trays for pivoting movement from a position between said pivot posts, and a position at least 90° from a line connecting said pivot posts.

4,239,309

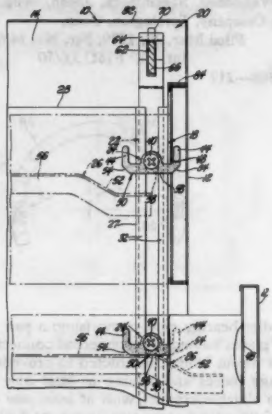
FILING CABINET INCLUDING DRAWER INTERLOCK

Eugene A. De Fouw, Holland, and Peter M. Baker, Mattawan, both of Mich., assignors to Lear Siegler, Inc., Kalamazoo, Mich.

Filed Jul. 31, 1975, Ser. No. 62,394

Int. Cl.[3] E05B *65/46*; E05C *7/06*

U.S. Cl. 312—221 **11 Claims**



1. In a file cabinet having side panels and a plurality of vertically arranged drawers supported between the side panels for movement between open and closed positions, an interlock for the drawers comprising: an inner panel fixedly mounted on one of the side panels; spaced slides extending vertically on the inner panel; a vertically extending interlock bar positioned between the slides and the adjacent side panel; a plurality of lock members respectively associated with the drawers; each lock member including a vertically elongated guide that extends outwardly between the spaced slides and is fixedly secured to the interlock bar so as to support the bar for translational movement in a vertical direction between lower and upper positions; each lock member also including an upwardly extending hook located laterally inward from the spaced slides on the inner panel so as to engage the associated drawer in the closed position thereof with the bar in its upper position in order to maintain the drawer closed; each drawer being movable to the open position thereof free of the associated lock member hook with the bar in its lower position toward which gravity biases the bar; each lock member having a slide surface located laterally inward from the inner panel; an actuator on each drawer including a ramp that engages the slide surface of the associated lock member upon an initial opening drawer movement so as to move the interlock bar to its upper position and thereby lock each other drawer in its closed position; and each actuator also including a horizontal slideway that engages the slide surface on the associated lock member upon further drawer opening to maintain the interlock bar in its upper position until the drawer is closed whereupon the bar moves to its lower position so that any selected drawer can then be opened.

4,239,310

CONTAINER DOOR AND BACK THEREFOR

Delmar E. Benjamin, Monroe, Ohio, assignor to The Celotex Corporation, Tampa, Fla.

Filed Apr. 2, 1979, Ser. No. 26,278

Int. Cl.[3] A47B *55/00*

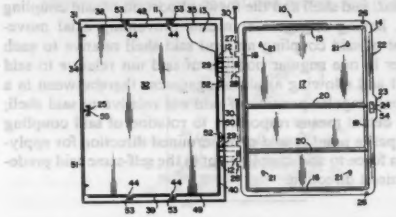
U.S. Cl. 312—227 **39 Claims**

1. A door for attachment to a container comprising:

(a) a frame having an opening therein and a front and a rear surface,

(b) a rearwardly extending border located upon said frame rear surface at a distance inward of the inner edge of said frame defining said opening therein, said frame border having at least one slot located along its rearmost edge,

(c) an object fitted in said frame and contacting the portion of the rear surface thereof between said frame border and said frame inner edge, with said at least one frame border



slot being adjacent to and to the rear of the back surface of said object, and

(d) a door back disposed behind and contacting said object back surface, said door back having at least one tab projecting from an edge thereof, said at least one tab being dimensioned to fit into said at least one frame border slot, whereby said object is held in place in said frame.

4,239,311

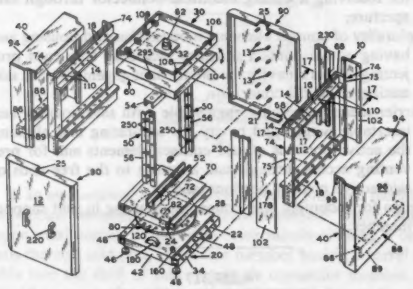
SUB-ASSEMBLIES FOR ROTARY STORAGE CABINET

Sherwood S. Brownlee, Waynesboro; Frederick H. Grubb, Jr., Stuarts Draft, and Warren G. Lohr, Aroda, all of Va., assignors to Acme Visible Records, Inc., Crozet, Va.

Filed Oct. 6, 1978, Ser. No. 949,260

Int. Cl.³ A47B *46/00*

U.S. Cl. 312—305 **4 Claims**



1. A kit for assembly of a rotary filing cabinet having a stationary housing and a rotor mounted in said housing, said kit comprising the following subassemblies for the housing:

(a) a base,

(b) an open rectangular pilaster frame, and

(c) an upper frame pan; said kit also including the following subassemblies for the rotor:

(a) a rectangular swivel base,

(b) a single open rectangular frame, and

(c) an upper frame pan; and said kit including ball bearing means for supporting said rotor base on said housing base.

4,239,312

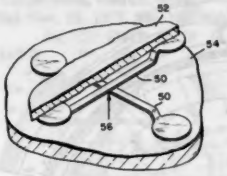
PARALLEL INTERCONNECT FOR PLANAR ARRAYS

Jon H. Myer, Woodland Hills, and Jan Grinberg, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 29, 1978, Ser. No. 964,550

Int. Cl.³ H05K *1/08*

U.S. Cl. 339—17 N **7 Claims**



1. For use in electrically interconnecting a plurality of stacked integrated circuit wafers, each having top and bottom surfaces, and through which electric signal paths extend between the surfaces, a microinterconnect comprising first and second metallic microspring bridges electrically connected respectively to said signal paths and respectively secured at their ends to the surfaces of their respective wafers with their central portions spaced from said wafer surfaces to impart a yieldable spring characteristic to said bridges, said bridges on said surfaces of adjacent wafers facing one another and being in resilient contact for electrically coupling said wafers .

4,239,313

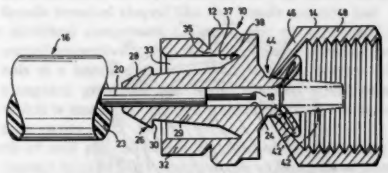
SWIVEL CONNECTOR

William W. Parr, 313 Little Ave., Barrie, Ontario, Canada (L4N 2Z8)

Filed Nov. 14, 1978, Ser. No. 960,570

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—89 C **5 Claims**



1. A connector for a coaxial cable of the kind which has a central conductor surrounded by a first insulative sheath, in turn enwrapped by a filamented conductor, in turn surrounded by a second insulative sheath, the connector comprising:

a conductive body defining an open-ended bore through which said first sheath can be received from one end of the bore,

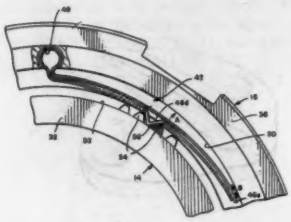
and a swivel nut at the other end of said bore formed initially integral with said body through a weak bridge portion capable of rupture to free the swivel nut, there being distortable means provided to capture the swivel nut with respect to the body after rupture.

4,239,314

ELECTRICAL CONNECTOR

Norman R. Anderson, Brookfield, and Vladimir Tomsa, Chicago, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Apr. 11, 1979, Ser. No. 29,240
Int. Cl.[3] H01R 13/54
U.S. Cl. 339—89 M 18 Claims



1. An electrical connector comprising first and second connector members, each connector member including interengageable contact means adapted for axial connection in electrical engagement with the contact means of the other connector;

a coupling ring carried by one of said connector members for rotation relative thereto;

complementary interengaging connection means between said coupling ring and the other of said connector members; and

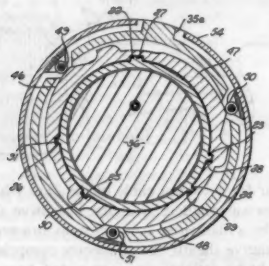
detent means between said coupling ring and said one connector member, said detent means including a radially deflectable leaf spring on one of said coupling ring or said one connector member, said leaf spring including at least a pair of superimposed leaf portions, a detent protrusion on one of said leaf portions between the ends thereof, and the other of said leaf portions providing a backup means against said one leaf portion to distribute flexing stresses along the length thereof and to limit bending or flexing in the area of said detent protrusion.

4,239,315

ELECTRICAL CONNECTOR

Leonard Lacaze, Jr., San Juan Capistrano, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,276
Int. Cl.[3] H01R 13/639
U.S. Cl. 339—89 M 10 Claims



1. An electrical connector comprising:

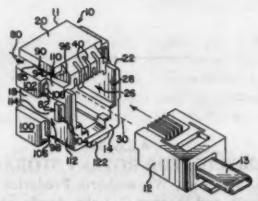
a hollow cylindrical shell; a hollow cylindrical barrel, said shell and said barrel having a telescoping connection, said shell and said barrel having a keyed connection to permit axial movement relative to each other, said keyed connection preventing rotational movement relative to each other; first and second insulators fixed inside said shell and said barrel, respectively, said first and second insulators carrying first and second contacts, respectively, one contact being a socket contact, the other contact being a pin contact, said shell and said barrel having abutting end surfaces when said contacts are mated; a coupling nut having a rear portion threaded to said barrel in a manner, when turned in a predetermined direction relative to said barrel and said shell, to cause said end surfaces to be drawn into mutual engagement, and said contact to be mated, said shell and the forward portion of said coupling nut, having engagement means preventing axial movement of said coupling nut and said shell relative to each other in one angular position of said nut relative to said shell and allowing axial disengagment therebetween in a second angular position of said nut relative to said shell; and detent means responsive to rotation of said coupling nut past a point in said predetermined direction for applying a force to said coupling nut in the self-same said predetermined direction.

4,239,316

ELECTRICAL CONNECTORS AND ASSEMBLIES THEREFOR

Tedford H. Spaulding, Norridge, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 3, 1978, Ser. No. 902,330
Int. Cl.[3] H01R 13/62; H02B 1/04
U.S. Cl. 339—91 R 42 Claims



12. An electrical connector adapted to be mounted in a support member comprising:

a housing including a front wall having an aperture therein, a back wall and a plurality of sidewalls defining a cavity for receiving a mating electrical connector through said aperture;

a plurality of contact elements mounted on said housing and having active contact portions including free ends projecting into said cavity for electrical engagement with said mating electrical connector;

barrier means releasably engageable with said housing and insertable within said cavity for separating and aligning the active portions of said contact elements and for preventing access through said aperture to the free ends of said active contact portions; and

means for mounting said connector housing in said support member.

4,239,317

ELECTRICAL CONNECTOR

David L. Hesse, and Joseph Warywoda, both of Chicago, Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jan. 2, 1979, Ser. No. 318
Int. Cl.[3] H01R 27/02
U.S. Cl. 339—91 R 8 Claims

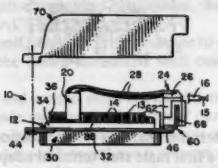
1. An electrical connector for mating with a complementary connector having a plurality of fixed contact elements, comprising:

support means;

first adapter means, including an associated set of electrical contacts lesser in number than the contacts of said complementary connector, constructed and arranged for dispo-

sition at any preselected one of a predetermined plurality of positions on said support means, for adapting the electrical connector for mating engagement with only selected ones of the fixed contact elements of said complementary electrical connector according to the position of said first adapter means on said support means to change the circuit through the connectors;

complementary mounting means on said support means and said first adapter means for releasably securing said first adapter means at any one of said preselected positions;



second adapter means, including an associated set of electrical contacts, supported by said support means in a fixed position for mating engagement with selected contact elements of a second complementary electrical connector; and

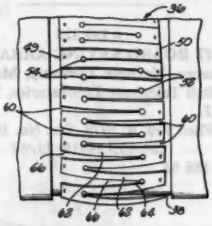
conductor means for electrically interconnecting said associated sets of electrical contacts of said first and second adapter means.

4,239,318

ELECTRICAL CONNECTOR SHIELD

Lawrence Schwartz, Huntington Beach, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 23, 1979, Ser. No. 59,785
Int. Cl.³ H01R *13/658*
U.S. Cl. 339—143 R **21 Claims**



1. In an electrical connector comprising plug and receptacle connector members having contacts therein which engage upon axial mating of said connector members along a center axis thereof, said plug connector member having a barrel slidable into the shell of said receptacle connector member, and shielding means for said contacts disposed between the outer surface of said barrel and the inner surface of said shell, said shielding means comprising an annular band formed of resilient metal being convexly curved in the longitudinal direction, said band having alternating slots therein opening at the opposite edges thereof, the improvement which comprises:

at least one side of each said slot being skewed relative to said axis and being higher than the other side of the slot; and

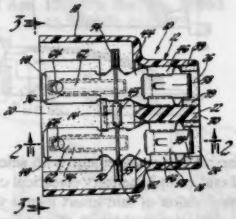
said band having a sufficient radial height and interference fit with respect to said shell whereby upon mating of said plug and receptacle connector members, said shell will radially compress said band to cause said slots to substantially completely close.

4,239,319

ELECTRICAL COMPONENT PACKAGE FOR INTERCONNECTION BETWEEN PLUG AND SOCKET CONNECTORS

Joseph H. Gladd; Theodore H. Horrell, Jr., both of Cortland, and Robert G. Plyler, Vienna, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1978, Ser. No. 959,990
Int. Cl.³ H01R *13/28*
U.S. Cl. 339—147 R **1 Claim**



1. An electrical component package for interconnection between matable plug and socket connectors having male and female terminals of mating configuration,

said package comprising a connector body of dielectric material having a plug portion at an end thereof and a socket portion at an opposite end thereof, said plug portion, and said socket portion being adapted to be connected respectively with a socket connector and a plug connector which is matable with the socket connector,

said connector body having a pair of laterally spaced terminal cavities open at an end thereof and communicating with a common cavity which is open at an opposite end thereof,

a pair of hermaphroditic terminals each having an elongated generally flat body having box-like female and male blade contacts of mating configuration formed on opposite longitudinal ends thereof which are matable respectively with male and female terminals of the socket and plug connectors,

said male blade contact having a raised central platform which extends into the median portion of the flat body to stiffen the terminal and increase the effective thickness of the male blade contact when inserted upside-down into a female terminal shaped like the female contact, and

an electrical component having a pair of wire leads connected respectively with the pair of hermaphroditic terminals at a lateral extension of the median portion of the elongated generally flat body, to form a subassembly which is insertable into the connector body via the common cavity,

each of said pair of hermaphroditic terminals having one contact latched in a respective one of said pair of laterally spaced terminal cavities and positioning the other contact and the electrical component in the common cavity.

4,239,320

ELECTRICAL CONNECTOR

David L. Hesse, Chicago; Ronald F. Krolak, North Riverside, and Jiulio E. Perna, Naperville, all of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jan. 2, 1979, Ser. No. 317
Int. Cl.³ H01R *27/02*
U.S. Cl. 339—154 A **18 Claims**

1. An electrical connector for mating with a complementary

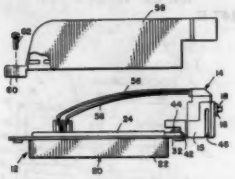
connector having a plurality of fixed contact elements, comprising:

housing means defining a cavity;

insert means including an insert element constructed and arranged for disposition at any preselected one of a predetermined plurality of positions within said cavity;

mounting means for releasably securing said insert means at any one of said preselected positions;

contact means, lesser in number than the contact elements of said complementary connector, supported by said insert



means for mating engagement with selected contact elements of said complementary electrical connector according to the position of said insert means within said cavity to change the circuit through the connectors; and

an adapter connector member on said housing means at a position spaced from said cavity, contact means supported by said adapter connector member for mating engagement with contact elements of a second complementary electrical connector, said contact means of said adapter connector member being electrically connected to said contact means on said insert means.

4,239,321

CONTACT ELEMENT WITH INTERIOR SUPPORT

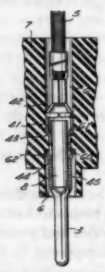
Erhard Bauer, Rappenau, Fed. Rep. of Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jul. 11, 1979, Ser. No. 56,471

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830620

Int. Cl.³ H01R *13/04*

U.S. Cl. 339—276 T **6 Claims**



1. A contact element for insertion into an insulating housing, said contact element comprising: an elongate formed sheet metal body having a terminal end for connection to a wire, a contact end and a locking portion intermediate said two ends, said locking portion including at least one outwardly projecting resilient tab for engaging the housing to anchor the contact element therein; and a stiffening pin in the interior of said locking portion forming an inward stop for limiting inward deflection of said at least one tab.

4,239,322

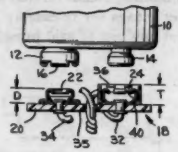
POLARITY PROTECTOR

Walter H. Gordon, Jr., Huntington, Conn., assignor to General Electric Company, New York, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,102

Int. Cl.³ H01R *13/64, 13/58*

U.S. Cl. 339—184 M **4 Claims**



1. A battery terminal harness for connection to a battery, the harness having a first male stud terminal adapted to be coupled to a first female battery terminal of one polarity and a second harness female terminal adapted to be coupled to a second male stud battery terminal of the opposite polarity, the improvement in said harness comprising,

an insulating support member,

said male and female harness terminals each mounted on and extending a fixed distance from said support member and each adapted to mate electrically with its opposite battery terminal,

an insulating washer-like cover member axially removably secured solely to the female of said harness terminals,

said washer cover member having an axial height exceeding the fixed distance of said harness terminals, and

wire means locked through said support member connecting each harness terminal with an electric circuit,

whereby the washer cover member prevents contact between said female harness terminal and said female battery terminal but permits contact between said female harness terminal and said male stud battery terminal to preclude reverse polarity contact of said harness and battery terminals at all times.

4,239,323

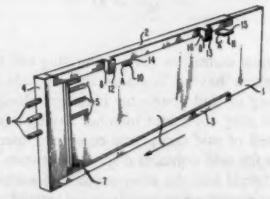
CIRCUIT BOARD KEYING ARRANGEMENT

Peter J. Tamburro, Hanover Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 8, 1979, Ser. No. 10,362

Int. Cl.³ H01R *13/64*

U.S. Cl. 339—186 M **3 Claims**



1. For use with plug-in circuit boards and circuit board receptacles having first and second guide rails for guiding the insertion of boards into the receptacles, a keying arrangement for preventing the insertion of boards into any but correct receptacles, comprising

a first projection located on a said board in one of a plurality of first coded surface locations colinearly arranged along the board in the direction of insertion of said board into a receptacle,

a second projection located on said board in an associated one of a like plurality of second coded locations also colinearly arranged in the direction of insertion of said board, each of the first locations being associated with a different one of the second locations and associated ones of the first and second locations being ordered in opposite directions, wherein each pair of associated first and second locations defines a unique circuit board key, and

first and second stops in a said receptacle designed to receive said board, the first and second stops being associated, respectively, with the first and second projections and located in said receptacle in the same spatial relationship as their respective associated projections, the arrangement being CHARACTERIZED IN THAT

the first and second locations are proximate to and parallel to one edge of the board associated with one of the guide rails,

both of the first and second stops are fixedly attached to said one of the guide rails on a side thereof corresponding to the side of the board containing the projections,

both the first and second stops have a dimension perpendicular to the direction of insertion and parallel to the surface of the board spanning both the first and second projections,

an initial one of the projections to enter the receptacle during board insertion has a dimension perpendicular to the board surface which is less than the corresponding dimension of the remaining projection, and

an initial stop encountered by the initial projection is displaced further from the board surface than the remaining stop by an amount greater than the dimension of said initial projection and less than the corresponding dimension of the remaining projection.

4,239,324

TERMINAL BLOCK FOR PRINTED CIRCUITS

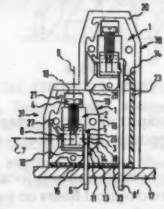
Paul P. Stenz, Detmold, Fed. Rep. of Germany, assignor to C. A. Weidmuller KG, Detmold, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,702

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833313

Int. Cl.³ H01R *9/22, 23/72*

U.S. Cl. 339—198 G **8 Claims**



1. An electrical terminal block for printed circuits, comprising: a plurality of terminals each having an insulating casing with an internal space, a connector bar in the internal space of the casing having at an end thereof a tag projecting from the casing, through a first aperture provided in the casing, for connection to a printed circuit, and clamping means in the internal space of the casing for clamping an external conductor to the connector bar, said clamping means including a clamping screw, the casing being provided with a second aperture for insertion of a said external conductor, and having a first external surface substantially parallel to the axis of the clamping screw and opposite the said second aperture, a second external surface substantially parallel to the insertion direction for an external conductor, and a third external surface disposed between, adjoining, and oblique with respect to the said first and second surfaces, the first aperture being in the said third external surface; the said terminals being disposed in a stepped configuration comprising one upper row of said terminals above at least one bottom row of said terminals with a horizontal offset of the terminals in the upper row relative to those in the bottom row(s) equivalent to half the width of one terminal, the terminals of the upper row having front edges bearing on the terminals of a bottom terminal row; and retaining plates which are offset in accordance with the horizontal offset of the terminal rows and are latched at least on the terminal block ends.

4,239,325

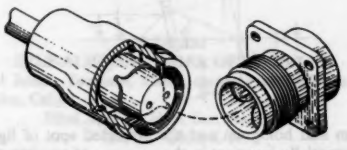
SELF-ALIGNING MULTI-PIN CONNECTOR

Thomas E. Tyson, 2686 Coldsprings Dr., Xenia, Ohio 45385

Filed Apr. 12, 1979, Ser. No. 29,582

Int. Cl.³ H01R *13/631*

U.S. Cl. 339—89 M **6 Claims**



1. A connector comprising:

a. first and second body members adapted to be joined and separated by relative movement of said body members along a common axis;

b. cooperative retaining means on each of said body members arranged to interlock with said body members in joined condition;

c. at least one of said body members having a rotatable connection to its corresponding retaining means; and

d. cooperative cams of mirrored relationship on each body member, each cam having curvilinear contoured surfaces terminated by a key and keyway.

4,239,326

HOLOGRAPHIC SCANNER FOR RECONSTRUCTING A SCANNING LIGHT SPOT INSENSITIVE TO A MECHANICAL WOBBLE

Charles J. Kramer, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 23, 1976, Ser. No. 708,245

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—3.71 **1 Claim**

1. A holographic raster scanning system including:

a source of coherent light,

a hologram disposed in the path of a reconstruction light wavefront and a principal light ray thereof from said source and mounted for rotation to effect the transverse movement of said hologram relative to said wavefront and said principal light ray,

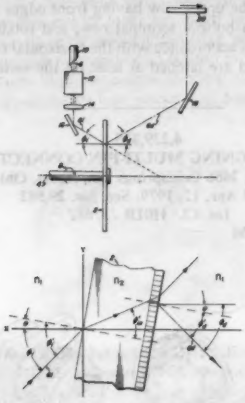
said hologram effective to transmit said wavefront and said principal light ray, incident thereon at an angle of incidence ϕ_i, and to diffract said principal ray at a first order diffraction angle ϕ_d, to reconstruct an image wavefront forming a spot of light for scanning when said hologram is rotated,

said hologram being disposed relative to said principal light ray such that said angles of incidence and diffraction are substantially equal,

said wavefront and said hologram being further disposed so that said wavefront is substantially radially symmetrical relative to the axis of rotation of said hologram, said symmetry being achieved by directing said wavefront so that

its apparent, or real, origin is a point on said hologram axis of rotation

whereby the reconstructed image wavefront propagating



from said hologram and the projected spot of light are substantially invariant in the presence of varying degrees of tilt of said hologram relative to said principal light ray when said hologram is rotating.

4,239,327

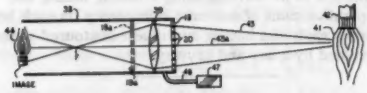
OPAQUE PERFORATED FILTER

Roy W. Grant, 529 Wilshire La., Santa Maria, Calif. 93454

Filed Mar. 6, 1978, Ser. No. 883,884

Int. Cl.³ G02B *7/04*

U.S. Cl. 350—17 **4 Claims**



1. The combination for viewing by the human eye a brightly lighted object, comprising:

a. a telescope having an objective lens and an eyepiece lens, said eyepiece being of the type for viewing by a human eye;

b. and an opaque filter disposed at the objective lens having a plurality of windows of approximately equal size and approximately uniform distribution; said combination further characterized in that the viewed image is of reduced intensity, but is otherwise unaffected.

4,239,328

COLLAPSIBLE BINOCULAR AND BLANK THEREFOR

Harry L. Justice, Sr., 4210 Reading Rd., Richmond, Va. 23222; Harry L. Justice, Jr., 4-9-1 Yotsugi, Katsushika-ku, Tokyo 124, and Yoshinori Watanuma, 3-9-6 Yahiro, Sumida-k u, Tokyo-to, both of Japan

Filed Jul. 18, 1978, Ser. No. 925,772

Claims priority, application Japan, Dec. 10, 1977, 52-165884

Int. Cl.³ G02B *7/02*

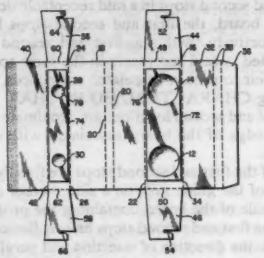
U.S. Cl. 350—70 **16 Claims**

1. A collapsible binocular having a housing formed of semi-rigid sheet material comprising:

front and rear lens mounting panels,

top and bottom panels, each being hingedly connected to both of said lens mounting panels, said top and bottom panels each having a pair of transverse fold lines substantially parallel to and spaced from said lens mounting panels,

each of said lens mounting panels being provided with end flaps at each end thereof hingedly connected therewith, the end flaps of the rear lens mounting panel being hingedly connected to the end flaps of the front mounting panel for forming end walls of said binocular,



whereby pressure application on said lens mounting panels urging said lens mounting panels toward each other causes outward deflection of said top and bottom panels and folding of said top and bottom panels along said transverse fold lines for collapsing said binocular and the collapsed binocular having a thickness approximately equal to the spacing of the lines of said pairs of fold lines.

4,239,329

OPTICAL NONRECIPROCAL DEVICE

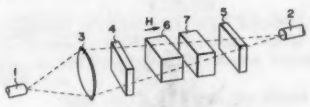
Takao Matsumoto, Yokosuka, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jul. 26, 1979, Ser. No. 60,881

Claims priority, application Japan, Aug. 4, 1978, 53-95221; Nov. 17, 1978, 53-141862; Dec. 26, 1978, 53-162976; Feb. 26, 1979, 54-21678

Int. Cl.³ G02B *5/14*; G02F *1/09*

U.S. Cl. 350—96.15 **7 Claims**



1. An optical nonreciprocal device adapted to optically couple together two opposed optical fibers, said device comprising:

light focusing and transmitting means located in an optical path between said two optical fibers on a side of either one of said optical fibers for converging and diverging light propagating through said optical path;

a plurality of anisotropic crystal members interposed between said light focusing and transmitting means and the other optical fiber, while the thicknesses of said anisotropic crystal members being set to predetermined values such that the light is separated into ordinary ray and extraordinary ray and then said ordinary ray and said extraordinary ray are synthesized again to be transmitted to the other optical fiber while said ordinary ray and said extraordinary ray propagate in a forward direction, and that said ordinary ray and said extraordinary ray propagating from said other optical fiber in a reverse direction would not superpose each other at an excitation end of said one optical fiber; and

magneto-optical members having a predetermined polarization rotating angle and interposed between any two of said plurality of anisotropic crystal members for imparting a

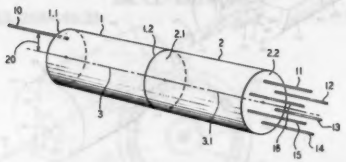
predetermined polarization rotation to said separated ordinary and extraordinary rays while they propagate through said optical path.

4,239,330

MULTIPLE OPTICAL SWITCH

Arthur Ashkin, Rumson, and Walter J. Tomlinson, III, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 18, 1978, Ser. No. 952,282
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.18 **11 Claims**



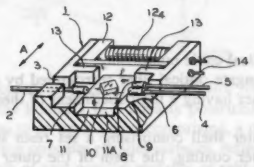
1. Apparatus for selectively coupling light which comprises:
first (1) and second (2) graded refractive index rods, each of said first and said second rods propagating light therethrough in substantially a sinusoidal path and having a length approximately equal to one-quarter of the period of the sinusoidal path, each of said first and said second rods further having first (1.2 and 2.1) and second (1.1 and 2.2) end surfaces;
an optical source (10) terminated at said second surface (1.1) of said first rod at a predetermined distance from the common lens axis (3 and 3.1); and
a plurality of optical receptors (11–16) terminated at said second surface (2.2) of said second rod at said predetermined distance from said common lens axis at a plurality of angular displacements about said common lens axis;
characterized in that said apparatus further comprises:
means (30 and 31) for supporting said first and said second rods in axially aligned fashion with their first surfaces abutting in substantially parallel relation to define a common lens axis in such a manner that said second rod is rotatable about said common lens axis while maintaining said first surfaces in said substantially parallel relation.

4,239,331

MECHANICAL OPTICAL SWITCHING DEVICE

Tsutomu Aoyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1978, Ser. No. 968,698
Claims priority, application Japan, Dec. 15, 1977, 52/151292
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.20 **4 Claims**



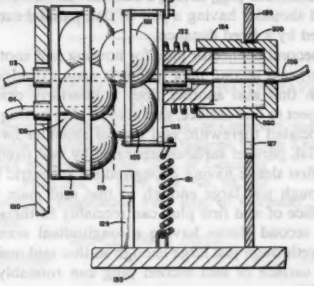
1. A mechanical optical switching device comprising: an optical fiber means on the input side of said switching device; first lens means for collimating an incident light beam emitted from said input-side optical fiber and into said switching device; at least one transparent dielectric plate means with a uniform refractive index disposed at a position which receives said light collimated by said first lens means, said transparent dielectric plate means changing the optical transmission path of said light beam after it has passed through said first lens means; a plurality of second lens means positioned to selectively receive light from said plate means, said second lens means focusing the light beam passed through said first lens means; a plurality of optical fiber means on the output-side of said switching device for receiving said light beam emerging through said second lens means; and means for driving said dielectric plate to selectively switch the optical axis of said input-side fiber.

4,239,332

SELF-ALIGNING FIBER OPTIC RELAY

Michael Inbar, Torrance, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Apr. 13, 1979, Ser. No. 29,624
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.20 **30 Claims**

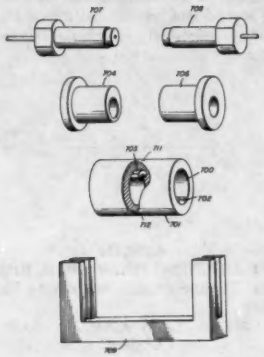


1. An apparatus for switchably establishing an optical connection between the end of a first optical fiber and the end of a member of a set of optical fibers, comprising:
first means for mechanically securing said first optical fiber near the end;
second means for mechanically securing each optical fiber of said set of optical fiber near its end;
bias means for biasing said first means and said second means against each other;
said first and second means having cooperative surfaces shaped to cause said first means to assume one of a specifiable set of mechanically stable positions against said second means when biased by said bias means, said positions including an alignment position in which the end of said first optical fiber is in optical alignment with the end of an optical fiber of said set;
switch means for moving said first and second means with respect to each other between said alignment position and other of said mechanically stable positions;
said cooperative surfaces of said first and second means each including plural similarly sized dome-like projections from said first and second means, respectively.

4,239,333
NON-TWIST ECCENTRIC COUPLER

Mark L. Dakss, Sudbury; George J. Meslener, Acton, and Samuel M. Stone, Lynnfield, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 4, 1978, Ser. No. 966,170
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.21 8 Claims



1. In combination, apparatus for coupling one optical fiber to another, comprising

(a) a first connector plug for housing said one optical fiber, said first plug having a main cylindrical surface such that said one fiber is interiorly oriented with respect to said surface, said plug having a shoulder associated therewith, said shoulder having a pair of flat, parallel surfaces separated by a fixed distance;

(b) a second connector plug for housing said another optical fiber, said second plug having a main cylindrical surface such that said another fiber is interiorly oriented with respect to said surface, said second plug having a shoulder associated therewith, said second shoulder having a pair of flat, parallel surfaces separated by said fixed distance;

(c) a first sleeve having a longitudinal eccentric hole therethrough just large enough so that said main cylindrical surface of said first plug can rotatably fit therewithin;

(d) a second sleeve having a longitudinal eccentric hole therethrough just large enough so that said main cylindrical surface of said second plug can rotatably fit therewithin;

(e) first means for supporting said first sleeve for rotational movement about a first axis;

(f) second means for supporting said second sleeve for rotational movement about a second axis; said second axis being parallel to, but not co-linear with said first axis;

(g) first slotted means, associated with said first support means, for receiving said flat surfaces of said first plug; and

(h) second slotted means, associated with said second support means, for receiving said flat surfaces of said second plug.

4,239,334
OPTICAL THREE ROD WAVEGUIDE CONNECTOR

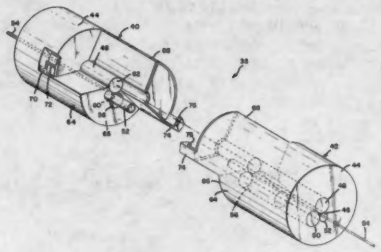
Tore R. Johnson, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 26, 1979, Ser. No. 15,565
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.21 9 Claims

1. In an optical waveguide connector of the type having a pair of matingly engaged connector bodies, each body provided with three rods radially cooperating to define an elongate interstitial space for receiving a corresponding waveguide, the improvement comprising:

two of said rods of each connector body having diameters larger than the diameter of a third rod, said interstitial space defined by said rods being of oversized sectional dimension in relation to the diametric size of a waveguide received therein and having a diameter variable within a specified range;

said third smaller rod and one of said two larger-diameter rods of each connector body axially projecting forward



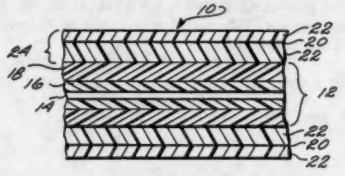
respective distances from the other of said two rods with a forward length of said corresponding waveguide engagingly received therebetween, and

said third smaller rod axially projecting forward from said one of said two rods to radially engage and wedge the forward length of waveguide of the opposite connector body against the corresponding forward projecting rods of the other connector body, whereby the forward lengths of both waveguides each are wedged between two said third smaller diametered rods and one said larger diametered rod.

4,239,335
FIBER REINFORCED OPTICAL FIBER CABLE

Kenneth M. Stiles, San Dimas, Calif., assignor to Sea-Log Corporation, Pasadena, Calif.

Continuation of Ser. No. 600,202, Jul. 30, 1975, Pat. No. 4,113,349. This application Aug. 28, 1978, Ser. No. 937,138
The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.23 17 Claims



1. An optical cable comprising:

(a) an elongate optical fiber surrounded by a coating of an elastomer having a high coefficient of thermal expansion; and

(b) an outer shell comprising a set resin surrounding the elastomer coating, the resin of the outer shell being set when said elastomer coating is in a thermally expanded state, said outer shell having a coefficient of thermal expansion less than the coefficient of thermal expansion of said elastomer coating and wherein the ratio of coefficients of thermal expansion of the elastomer coating to said outer shell is from about 3:1 to about 30:1, said outer shell

being substantially constrained by said elastomer coating when in its thermally non-expanded state from imparting radial compressive forces on said optical fiber.

4,239,336

OPTICAL COMMUNICATION CABLE

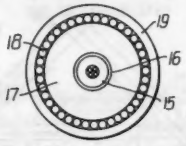
Colin S. Parfree, Harlow, and Peter Worthington, Southampton, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,678

Claims priority, application United Kingdom, Dec. 5, 1977, 50610/77; Dec. 13, 1977, 51773/77

Int. Cl.³ G02B *5/16*

U.S. Cl. 350—96.23 **7 Claims**



1. An optical fiber cable, comprising:

at least one optical fiber;

a tubular electrical conductor disposed about said optical fiber and having a wall that is thick compared with the diameter of said optical fiber;

an external sheath including a layer of dielectric material disposed about said tubular conductor; and

a tubular strength member overlying said layer of dielectric material.

4,239,337

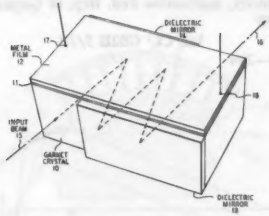
MAGNETO-OPTIC MODULATOR USING DIELECTRIC MIRRORS

Joe C. Campbell, Middletown, N.J.; Kam-Yin Lau, Pasadena, Calif., and Julian Stone, Rumson, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 8, 1979, Ser. No. 46,954

Int. Cl.³ G02F *1/09*

U.S. Cl. 350—151 **10 Claims**



6. A bounce-cavity magneto-optic modulator for amplitude modulation of the intensity of a linearly polarized input light beam in response to an input signal comprising, a magneto-optic medium having opposite parallel surfaces, reflecting means mounted on each of said parallel surfaces of said medium for reflecting said input light beam in a zig-zag path in said medium, and magnetic field means responsive to said input signal for changing the magnetic field in said medium so as to change the polarization of said input light beam, characterized in that said reflecting means includes at least one multilayered dielectric mirror.

4,239,338

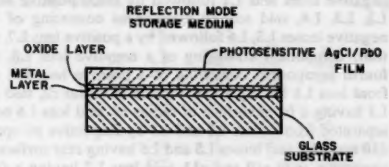
SILVER HALIDE OPTICAL INFORMATION STORAGE MEDIA

Nicholas F. Borrelli, Elmira, and Peter L. Young, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,813

Int. Cl.³ G02B *5/30*; G01D *15/24*

U.S. Cl. 350—155 **12 Claims**



1. A visibly absorbing, optically bleachable inorganic film comprising multiple polycrystalline silver chloride layers containing crystals of additively colored silver chloride, having a thickness not exceeding about 2 microns, which exhibits, in the optically unbleached state, a light transmittance at 6300 Å not exceeding about 0.3 and a light transmittance at 8500 Å of at least about 0.5.

2. A multilayer photosensitive inorganic film having a thickness not exceeding about 2 microns and comprising alternating layers of PbO and AgCl, including at least three AgCl layers comprising additively colored AgCl crystals, wherein the film has, in the optically unbleached state, a light transmittance at 6300 Å not exceeding about 0.3 and a light transmittance at 8500 Å of at least about 0.5.

4,239,339

VARIFOCAL OBJECTIVE FOR PHOTOGRAPHIC CAMERA

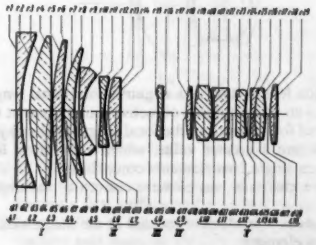
Werner Wagner, Odernheim, Fed. Rep. of Germany, assignor to Jos. Schneider GmbH & Co. and Optische Werke Kreuznach, both of Bad Kreuznach, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,532

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830202

Int. Cl.³ G02B *15/18*

U.S. Cl. 350—184 **11 Claims**



1. In an optical objective with an adjustable front group and a fixed rear group, said front group consisting of a substantially stationary positive first component, an axially shiftable negative second component, an axially shiftable negative third component and a fixed positive fourth component, said second and third components having first limiting positions relatively close to said first component and remote from each other for establishing a minimum overall focal length F_{min} and having second limiting positions relatively remote from said first component and close to each other for establishing a maximum

overall focal length F_{POSI}, the axial shifting of said second and third components between said first and second limiting positions thereof being correlated to project an image of an object upon a receiving surface in a plane separated from said rear group by an invariable back-focal distance,

the improvement wherein said first, second, third and fourth components and said rear group having respective individual focal lengths f_I, f_{II}, f_{III}, f_{IV}, f_V whose absolute values are of the order of magnitude of the diagonal FD of the projected image, said first component consisting of a negative front lens L1 followed by three positive lenses L2, L3, L4, said second component consisting of two negative lenses L5, L6 followed by a positive lens L7, said third component consisting of a negative lens L8, said fourth component consisting of a positive lens L9, said front lens L1 having a rear surface of radius r2, said lens L2 having a front surface of radius r3, said lens L6 being separated from lenses L5 and L7 by respective air spaces d10 and d12, said lenses L5 and L6 having rear surfaces of respective radii r10 and r12, said lens L7 having a front surface of radius r13, the following conditions being satisfied:

$f_I \geq FD$,

$|f_{II}| \leq FD$,

$|f_{III}| \geq FD$,

$f_{IV} \leq 0.5(|f_{II}| + |f_{III}|)$,

$r3 < r2$,

$d10 > 2d12$,

$r13 < 0.6(r10 + r12)$,

the distances of said second component from said first component in said first and second limiting positions differing from each other by less than 0.6FD, the distances of said third component from said second component in said first and second limiting positions differing from each other by less than $0.5f_{II}$.

4,239,340

CONVERSION LENS SYSTEM

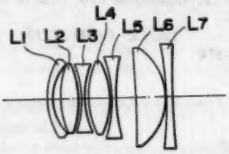
Shuji Ogino, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 2, 1978, Ser. No. 947,736

Claims priority, application Japan, Oct. 4, 1977, 52-119793

Int. Cl.³ G02B *9/60, 9/62, 9/64*

U.S. Cl. 350—214 **12 Claims**



1. A conversion lens system of a negative total focal length to be attached to an exchangeable objective lens system at the image side thereof for converting the focal length of the objective lens system into a greater value, which conversion lens system is of seven single lens elements comprising:

a first negative meniscus lens element convex to the object side;

a second biconvex lens element located at the image side of the first lens element;

a third biconcave lens element located at the image side of the second element;

a fourth biconvex lens element located at the image side of the third element;

a fifth negative lens element located at the image side of the fourth element, the absolute value of the radius of curvature of the image side of the fifth element being greater than that of the object side surface of the fifth element;

a sixth positive lens element located at the image side of the fifth element, the absolute value of the radius of the curvature of the object side surface of the sixth element being greater than that of the image side surface of the sixth element; and

a seventh biconcave lens element located at the image side of the sixth element.

4,239,341

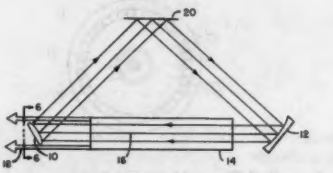
UNSTABLE OPTICAL RESONATORS WITH TILTED SPHERICAL MIRRORS

Charles M. Cason, III; James F. Perkins, and Robert W. Jones, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1978, Ser. No. 956,137

Int. Cl.³ H01S *3/083*

U.S. Cl. 350—294 **7 Claims**



1. A collimated-output unstable resonator comprising a pair of spherical mirrors tilted at substantial angles of about 10° to about 70° relative to an axis therebetween and separated a predetermined distance, one of said spherical mirrors having a smaller reflective dimension than that of the other and having a generally rectangular peripheral shape, and mirror means mounted relative to said spherical mirrors so as to complete a continuous optical path with said mirrors to establish a continuous feedback path, and said spherical mirrors being shaped and tilted sufficiently relative to each other to cause an asymmetric magnification collimated-output in x and y directions to be produced in a generally rectangular shape at said one of said spherical mirrors.

4,239,342

OPTICAL FOCUSING SYSTEM WITH TWO ELLIPSOIDAL MIRRORS

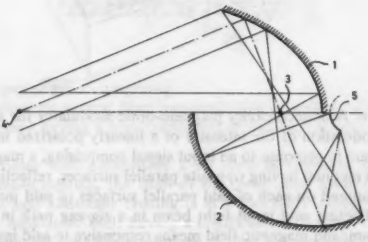
Friedrich Aurin, Heidenheim-Schnaitheim, and Helmut Knutti, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed May 16, 1979, Ser. No. 39,563

Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822579

Int. Cl.³ G02B *5/10*

U.S. Cl. 350—294 **2 Claims**



1. An optical focusing system comprising two mirrors having reflecting surfaces in the shape of ellipsoids of revolution, characterized by the fact that the mirrors are so positioned relative to each other that the second mathematical focal point

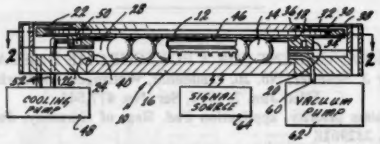
of the first ellipsoid of revolution coincides substantially with the first mathematical focal point of the second ellipsoid of revolution, counting the focal points in the direction of passage of the light, and that the entrance pupil of the focusing system lies substantially in the first mathematical focal point of the first ellipsoid of revolution, and that furthermore, with a given vertex radius of curvature of the major-axis vertex of the second ellipsoid of revolution, the ratio of the length of the major axis to the length of the minor axis of this second ellipsoid of revolution is so selected that the isoplanasie condition for the elimination of the coma of third order is satisfied.

4,239,343

ACTUATOR CONFIGURATION FOR A DEFORMABLE MIRROR

Edwin H. Wrench, La Jolla, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Sep. 4, 1979, Ser. No. 72,463
Int. Cl.³ G02B 5/10
U.S. Cl. 350—295 **7 Claims**



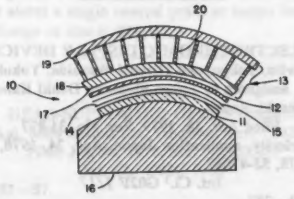
1. A deformable mirror for use in an optical system to displace a radiant beam, comprising:
a bimorph piezoelectric actuator backplate,
an array of piezoelectric linear actuators supported on said backplate and having spherical surfaces,
a mirrored faceplate,
means for holding said mirrored faceplate against said spherical surfaces, and
means for applying electrical signals to said actuators to deform said mirrored faceplate.

4,239,344

REFLECTOR FOR SOLAR COLLECTORS

Karl Wildenrotter, Munich, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,643
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738595
Int. Cl.³ G02B 5/08
U.S. Cl. 350—310 **1 Claim**



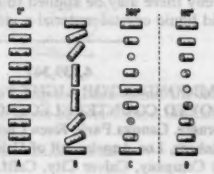
1. In a reflector for solar collectors, including a glass plate having one side mirror-coated, the improvement comprising: said glass plate having a thickness less than that required for the glass thickness of a self-supporting glass plate; a support member for said glass plate, said glass plate having the mirror-coated side thereof bonded to said support member, said support member comprising at least one support plate, and rib-like stiffener means being connected with said support plate; and a foil arranged and bonded intermediate said glass plate and said support member.

4,239,345

BISTABLE LIQUID CRYSTAL TWIST CELL

Dwight W. Berreman, New Providence, and William R. Heffner, Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1979, Ser. No. 30,172
Int. Cl.³ G02F 1/137
U.S. Cl. 350—331 R **11 Claims**



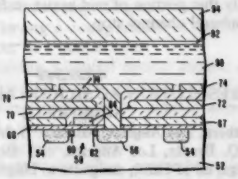
1. A liquid crystal cell comprising
(1) a liquid comprising liquid crystal; and
(2) bounding surfaces which align liquid crystal adjacent the surfaces, and which include means to apply switching energy; the invention characterized in that the liquid crystal comprises a cholesteric liquid crystal, in that the cell has at least two stable states, in that the twist of the liquid crystal is constrained to a value other than its unstrained value in at least one of the stable states, in that the liquid crystal is substantially free of disclinations and walls in the stable states, and in that the cell may be switched between at least two stable states without passing a disclination across the active region.

4,239,346

COMPACT LIQUID CRYSTAL DISPLAY SYSTEM

Randahl B. Lloyd, San Marcos, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 23, 1979, Ser. No. 41,572
Int. Cl.³ G02F 1/133
U.S. Cl. 350—334 **6 Claims**



1. A liquid crystal display panel for providing a pictorial display comprising in combination:
(a) a semiconductor backplate of a first conductivity type having a first surface and a second surface;
(b) a plurality of substantially parallel, equally spaced conductive gate buses on the first surface of said semiconductor backplate;
(c) a plurality of substantially parallel, equally spaced drain bus diffusions of a second conductivity type formed within said semiconductor backplate, said drain bus diffusions being orthogonal to and electrically insulated from said gate buses;
(d) a field-effect transistor (FET) formed within each cell area defined by the intersection of an adjacent pair of gate buses with an adjacent pair of drain bus diffusions;
(e) a coplanar array of closely spaced, reflective back elec-

trodes, each of said back electrodes overlying one of said FETs and being in electrical connection with the source thereof;

(f) a transparent electrode spaced from said coplanar array of reflective electrodes; and

(g) liquid crystal material confined between said front and back electrodes, and defining an array of portions, each portion overlying a reflective back electrode;

(h) the gate of each of said FETs in electrical connection with one of said conductive gate buses and the drain of each of said FETs comprising a portion of one of said drain bus diffusions so that there is provided a dense matrix of individually addressable reflective electrodes whereby there may be applied to each overlying portion of said liquid crystal material a video analog voltage.

4,239,347

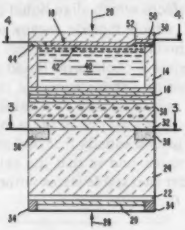
SEMICONDUCTOR LIGHT VALVE HAVING IMPROVED COUNTERELECTRODE STRUCTURE

Paul O. Braatz, Canoga Park; Kuen Chow, Thousand Oaks, and Jan Grinberg, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 29, 1979, Ser. No. 43,077

Int. Cl.³ G02F *1/135*

U.S. Cl. 350—336 **9 Claims**



1. In light valve of the type wherein a layer of liquid crystal material lies intermediate a transparent counterelectrode and a photosensitive semiconductor substrate having an upper surface and a lower surface, said upper surface including a highly doped peripheral channel stop region, the improvement which comprises said transparent counterelectrode overlying essentially only that portion of said upper surface which lies within said peripheral channel stop.

4,239,348

HIGH RESOLUTION AC SILICON MOS LIGHT-VALVE SUBSTRATE

Jan Grinberg, Los Angeles; Michael Waldner, Woodland Hills; Paul Q. Braatz, Los Angeles, and Alexander D. Jacobson, Topanga, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 967,444, Dec. 7, 1978, abandoned, which is a continuation of Ser. No. 834,856, Sep. 19, 1977, abandoned. This application Nov. 30, 1979, Ser. No. 99,381

Int. Cl.³ G02F *1/135*

U.S. Cl. 350—342 **1 Claim**

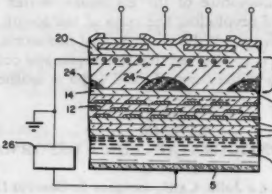
1. An alternating current driven liquid crystal light valve including in combination;

(a) an AC activated liquid crystal layer;

(b) interface means adjacent said liquid crystal layer for optically isolating said liquid crystal layer from the remaining portion of the structure;

(c) a light valve substrate structure including a dielectric layer adjacent said interface means and a semiconductor body of predetermined thickness and conductivity adjacent said dielectric layer;

(d) means for applying across said light valve substrate an AC biasing electric field which depletes said semiconductor body of mobile charge carriers during a portion of the AC cycle whereby signal representing charge carriers in said semiconductor body transfer while said body is depleted of mobile charge carriers under the influence of said electric field; and



(e) means in said semiconductor body for focusing said signal representing charge carriers for improved spatial resolution of said signal.

4,239,349

ARRANGEMENT FOR A POLYCHROME DISPLAY

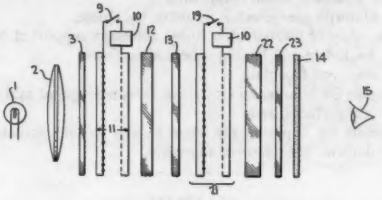
Terry J. Scheffer, No. 20, Lindenhof, Wettingen, Switzerland

Filed Jun. 7, 1974, Ser. No. 477,541

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1973, 2329618

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—347 R **8 Claims**



1. An arrangement for a polychrome display, comprising in serial association a light source, a linear polarizing filter, at least one electro-optical nematic liquid crystal rotating element adapted to rotate the plane of polarization of a light ray when no electrical potential is applied and to leave the plane of polarization unchanged when potential is applied, a passive birefringent retardation plate and a further neutral linear polarizing filter forming an assembly.

4,239,350

ELECTROCHROMIC DISPLAY DEVICE

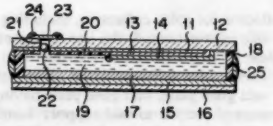
Hiroshi Morita, Tokyo, and Hiroshi Washida, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 18, 1979, Ser. No. 31,877

Claims priority, application Japan, Apr. 24, 1978, 53-47684; Apr. 24, 1978, 53-47687

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **9 Claims**



1. An electrochromic display device comprising:

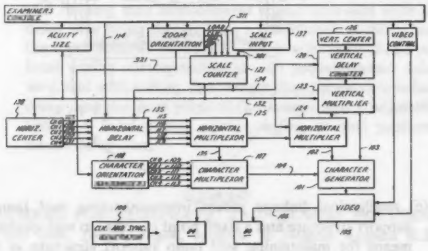
a display electrode;
a counter electrode spaced from the display electrode;
an electrolyte filled in the space between the display electrode and the counter electrode;
a first coloring crystalline layer formed on the display electrode, containing electrochromic material and having a specific pattern; and
a second coloring amorphous layer laid on the first coloring layer and containing electrochromic material.

4,239,351

APPARATUS FOR GENERATING AND DISPLAYING VISUAL ACUITY TARGETS

Robert E. Williams, Pearland; Thomas A. Decker, Houston; Charles Kurtzman, Houston, and Christian L. Kuether, Houston, all of Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Sep. 26, 1978, Ser. No. 945,943
Int. Cl.³ A61B 3/02
U.S. Cl. 351—36 **23 Claims**



1. An apparatus for generating and displaying visual acuity targets comprising,
an electronic display device for displaying visual acuity testing targets,
an electronic memory connected to said device containing a code for constructing a multiplicity of acuity targets for presentation to the display device,
means connected to the memory for varying the size of said targets presented to the display device,
means connected to the memory for presenting the targets in various orientations,
control means for selective actuation of the size varying means and the orientation means, and
means for varying the size of said targets includes means for varying the vertical and horizontal dimensions of the target about a single central point so target location does not change as size is varied.

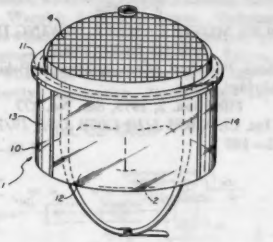
4,239,352

HEAD-SUPPORTED OPTIC SHIELD

E. J. Dockal, 8606 Kellett La., Houston, Tex. 77028

Filed Jul. 20, 1979, Ser. No. 59,257
Int. Cl.³ G02C 7/08
U.S. Cl. 351—57 **8 Claims**

1. A head-supported optic shield comprising
an annular supporting member adapted to be worn on the head of the user,
a continuous cylindrical shield supported on said annular supporting member, surrounding the head of the wearer and extending from above to substantially below the level of the eyes of the wearer,
said cylindrical shield being constructed of an optically clear material, substantially all of which comprises optical lens material of differing optical focus,
means supporting said shield for rotary movement between fixed positions on said supporting member, and



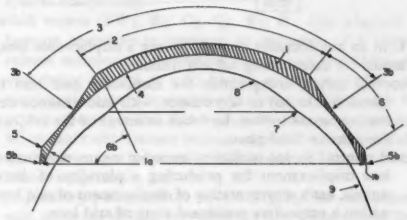
said cylindrical shield being rotatable about the head of the wearer while being worn between fixed positions of different optical focus.

4,239,353

CONTACT LENSES HAVING SPECIALLY PROFILED CROSS SECTIONS

Bruno Koller, Hasengasse 23, 6 Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 954,432
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2749144
Int. Cl.³ G02C 7/04
U.S. Cl. 351—160 H **1 Claim**



1. An optical contact lens comprising body means forming a circular optical lens having a configuration to approximately conform to the contour of a human eye,
said body means having a central optical section approximately conforming to the curve of the cornea of a human eye and a peripheral section to be situated adjacent the scleral curve of a human eye and terminating at a thin peripheral edge of the body means,
said body means further including a zone interconnecting said central optical section and said peripheral section,
a portion of said zone having a thickness less than the thickness of said central section and said peripheral section, said portion being adapted to be positioned approximately adjacent the limbus of the eye at a position spaced from said optical section,
said zone permitting said peripheral section to flex relative to said central optical section and automatically conform to the particular curvature of the sclera of an individual's eye,
said peripheral section having a continuous variable thickness respectively increasing from said peripheral edge and said zone creating an external apex spaced from said edge at the maximum thickness thereof and spaced from said portion of said zone, and
said body means having a pair of intersecting outer surfaces respectively extending from said central optical section

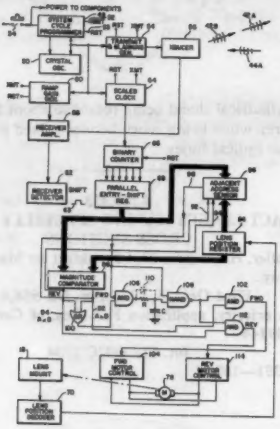
and said apex to create said portion of said zone at the intersection thereof.

4,239,354

AUTOFOCUS MOVIE CAMERA HAVING IMPROVED FOCUS RESPONSE

Edwin K. Shenk, Westford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1979, Ser. No. 277
Int. Cl.³ G03B *3/10*; G05B *5/01, 19/29*
U.S. Cl. 352—140 **8 Claims**



1. In an autofocusing camera having a displaceable lens, means for determining subject distance,

control means energizeable for displacing said lens to a location selected in accordance with said distance determining means to thereby focus an image of the subject on the camera focal plane,

said control means including encoder means responsive to lens displacement for producing a plurality of discrete signals, each representative of displacement of said lens to within a respective positional zone of said lens,

and said control means including means for terminating displacement of said lens within a positional zone selected in accordance with said distance determining means, the improvement comprising:

that said displacement terminating means includes,

means for generating a signal representative of said lens at a positional zone immediately adjacent said selected positional zone; and

means responsive to said adjacent positional zone signal for de-energizing said lens displacing control means for a predetermined period of time and for reenergizing said lens displacing control means if said displaceable lens is not positioned to within said selected positional zone within said predetermined period of time.

4,239,355

VISUAL SIMULATOR PROJECTION SYSTEM

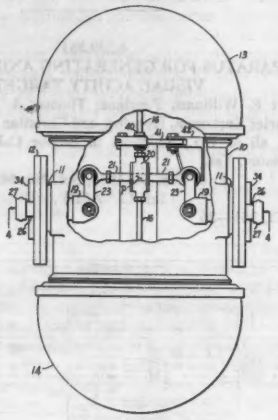
Hughie A. Brown, Jr., Dallas, and Joe L. Walker, Grand Prairie, both of Tex., assignors to Vought Corporation, Dallas, Tex.

Filed Feb. 5, 1979, Ser. No. 9,989
Int. Cl.³ G03B *21/20*
U.S. Cl. 353—87 **9 Claims**

1. A projection system for projecting a visual image onto the internal surface of a spherical viewing surface comprising:

(a) first and second hemispherical transparencies bearing a projectable image, said transparencies separated and supported by gimbal means adapted to simultaneously rotate said transparencies about mutually perpendicular X, Y and Z axes at a point displaced from the center of said spherical viewing surface,

(b) lamp support structure supporting a pair of spaced light sources, each of said light sources positioned at pre-determined positions which represent a single point displaced from the geometric center of the sphere formed by said first and second hemispherical transparencies, and



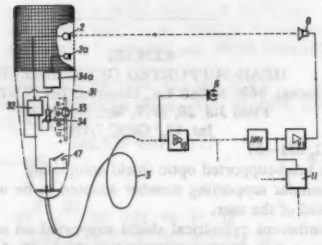
(c) mechanical linkage means interconnecting said lamp support structure and a fixed point external to said gimbal means for maintaining said lamp support structure in a fixed spatial relation with the center of said sphere and the center of said spherical viewing surface regardless of the attitude of said gimbal means.

4,239,356

SYSTEM FOR THE PERFORMANCE OF PHOTOGRAPHING WITH A MOTION PICTURE CAMERA, STILL PICTURE CAMERA OR TELEVISION CAMERA

Otto Freudenschuss; Otto Kantner, and Gerd Kittag, all of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Feb. 21, 1979, Ser. No. 13,656
Claims priority, application Austria, Feb. 28, 1978, 1407/78
Int. Cl.³ G03B *3/00, 17/18, 17/38*; H04N *5/26*
U.S. Cl. 354—23 R **13 Claims**



1. A device for photographing a photographic object constituting a performer, with a camera, such as motion picture cameras, still picture cameras or television cameras, particularly of direct sound-movie picture photography, the camera having a camera lens, comprising

transformer means for emitting a running time measurement signal,

signal receiving means for receiving said measurement signal from said transformer means,

one of said means being disposed at the camera, and the other of said means being spaced apart a distance from said one means and being associated with the photographic object, the time of travel of said running time measurement signal from said transformer means to said receiving means defining a running time corresponding to said distance,

distance determining means for determining an effective time value of said running time measurement signal,

signal transmitting means for transmitting the measurement signal at least from said signal receiving means to said distance determining means,

means for adjusting the focal plane of the camera lens,

delay means for operatively delaying the running time measurement signal,

means for adjusting the delay time of said delay means,

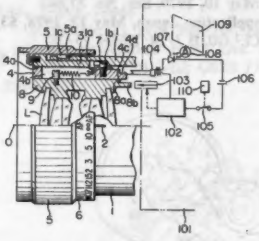
said delay means for changing said effective time value of said running time measurement signal such that with the delay time being shorter than a predetermined delay time the focal plane of the camera lens is adjustable ahead of a focal setting corresponding to said predetermined delay time, and with a delay time longer than the predetermined delay time the focal plane of the camera lens is adjustable behind a focal setting corresponding to said predetermined delay time.

4,239,357

CAMERA FOR AUTOMATIC AND MANUAL FOCUSING

Yozo Iida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,520
Claims priority, application Japan, Feb. 17, 1978, 53-16602
Int. Cl.³ G03B 7/08, 3/00
U.S. Cl. 354—25 5 Claims



1. A camera which permits automatic focusing and manual focusing comprising:

(1) an objective lens structure capable of assuming a condition ready for the automatic focusing and a condition ready for the manual focusing, said objective lens structure having a focusing lens, a lens supporting member for said focusing lens and manual focusing operating means movable by external operation to move said lens supporting member when said structure is in the condition ready for the manual focusing;

(2) an automatic focusing device for measuring the distance to an object to be photographed and moving said lens supporting member in accordance with the measured distance irrespectively of said manual focusing operating means; and

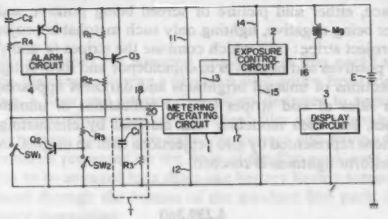
(3) means responsive to said manual focusing operating means to render said automatic focusing device operative when said manual focusing operating means occupies a specific position.

4,239,358

ALARM DEVICE CONTROL SYSTEM IN A CAMERA

Yoshiaki Ohtsubo, Kawasaki; Shigeo Akasaka, Kodaira; Sakuji Watanabe, Warabi; Mikio Takemae, Yokohama; Ryuzo Motoori, Kawasaki, and Yasunori Kitamura, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 7, 1979, Ser. No. 73,425
Claims priority, application Japan, Sep. 14, 1978, 53-125458[U]
Int. Cl.³ G03B 17/18
U.S. Cl. 354—60 E 4 Claims



1. An alarm device control system in a camera having a metering device (1) for measuring the brightness of an object and generating an output corresponding to a proper exposure value, and an alarm device (4) for receiving the output of said metering device as input and giving an alarm when the proper exposure value does not satisfy predetermined photographing conditions such as the limit of hand-held shooting and the like, said system comprising:

switch means (SW_1, R_4, C_2, Q_1, R_2, R_1, Q_3) adapted to become operative in response to operation of a shutter release member, said metering device and said alarm device being related to said switch means such that said metering device is operated when said switch means becomes operative and that said alarm device is operated when said switch means becomes operative and said alarm device becomes inoperative when said switch means becomes inoperative; and

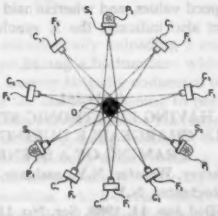
a preparatory power source device (C_1, R_3) for maintaining said metering device operative for a predetermined time after said switch means has become inoperative.

4,239,359

STEREOPHOTOGRAPHIC PROCESS FOR PRODUCING WORKS OF SCULPTURE

Isao Morioka, 3-23, Ookayama 2-chome, Meguro-ku, Tokyo, Japan

Filed Feb. 1, 1979, Ser. No. 8,534
Claims priority, application Japan, Feb. 28, 1978, 53-22503
Int. Cl.³ G03B 35/08; B44C 3/06
U.S. Cl. 354—113 3 Claims



1. In a stereophotographic process for producing works of sculpture by arranging a number of cameras and a number of projectors, each fitted with a screen having a number of paral-

lel stripes, in a circle around an object so as to face the latter, taking pictures of said object simultaneously with said camera while said striped screens are being projected thereon by said projectors, replacing said projectors and cameras by an increased number of projectors arranged in similar positions to face instead a mass of material to be modeled which is placed at the center, projecting the pictures as well as said screens fitted in said projectors on said mass of material, and then modeling said material until the stripes of the same sources on said screens and pictures projected are in coincidence on the material surface, the improvement which comprises fitting each pair of adjacent projectors with a picture for one and a screen for the other to match, when projected, on said material surface, either said picture or screen being positive and the other being negative, lighting only such matchable projectors to project stripes (s‴) which combine the stripes (s′ and s″) of said positives and negatives in coincidence and form fringelike projections of unusual brightness and darkness appearing on both sides of said stripes (s‴) as indications of unmatched stripes, and then modeling said material by eliminating the portions represented by said projections until an original model of uniform lightness is reached.

4,239,360

INDICATION DEVICE IN THE FINDER OF A SINGLE-LENS REFLEX CAMERA

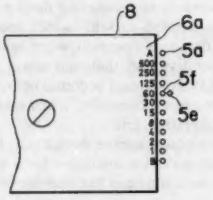
Fumio Urano, Omiya, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1978, Ser. No. 906,527

Claims priority, application Japan, May 23, 1977, 52/66198[U]

Int. Cl.³ G03B *17/20, 15/02*

U.S. Cl. 354—128 **3 Claims**



1. In an indication device in the finder of a single-lens reflex camera in which characters representing exposure values are arranged in said finder and exposure value indicating elements are arranged so as to indicate said characters, respectively, wherein the improvement is characterized in that an electric flash indicating element for indicating the readiness of an electric flash is located among said exposure value indicating elements so that a user of the camera need not shift his eye from the exposure value indicating elements in order to see said electric flash indicating element, wherein said characters indicate shutter speed values, and wherein said electric flash indicating element also indicates the X synchronization shutter speed.

4,239,361

CAMERA HAVING ELECTRONIC STROBE FLASH APPARATUS CHARGEABLE DURING VIEWFINDER FRAMING OF A SCENE

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 11, 1980, Ser. No. 111,427

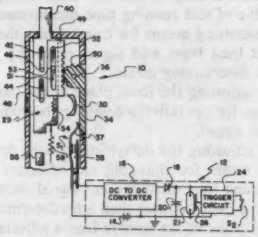
Int. Cl.³ G03B *15/03, 13/02, 17/38*

U.S. Cl. 354—145 **4 Claims**

1. In a camera having a viewfinder, chargeable electronic strobe flash apparatus, and actuatable switch means having first and second conditions for respectively preventing and causing the charging of said strobe flash apparatus, the improvement comprising:

(a) a cover member mounted for movement between a viewfinder-covering position for preventing a photographic scene from being framed within said viewfinder, and a viewfinder-uncovering position for permitting the scene to be framed within said viewfinder;

(b) a release member movably mounted for pre-exposure movement to a position to effect a photographic exposure; and



(c) means, coupling said release member to said cover member and said switch means, for (1) moving said cover member from its viewfinder-covering position into its viewfinder-uncovering position and (2) causing said switch means to assume its second condition during pre-exposure movement of said release member, thereby to cause the charging of said strobe flash apparatus while the scene is being framed within said viewfinder and before the exposure is effected.

4,239,362

CAMERA FILM ADVANCING APPARATUS

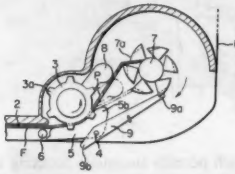
Akira Katayama, and Toshiaki Hozumi, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 10, 1979, Ser. No. 37,842

Claims priority, application Japan, May 13, 1978, 53/56144

Int. Cl.³ G03B *1/24;* B65H *75/28*

U.S. Cl. 354—212 **3 Claims**



1. In a film advancing apparatus for a camera, comprising a film take-up spool for taking up the film thereon, the spool being formed at its periphery with a plurality of longitudinal slots; a sprocket for advancing the film to the take-up spool; first and second film guide members disposed between the sprocket and the take-up spool and opposed to each other, wherein a leading portion of the film advanced by the sprocket is led to the take-up spool through a space formed between the first and second film guide members so that the leading portion is caught in one of the slots to be taken up by the take-up spool, the improvement comprising:

means defining recess on the periphery of said take-up spool between adjacent slots;

the first film guide member being disposed to guide the leading portion of the film advanced by the sprocket to the space formed between the first and second guide members; and

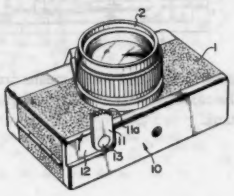
an end of the second film guide member being disposed for movement into one of the recesses of the take-up spool.

4,239,363

ELECTRONICALLY CONTROLLED SELF-TIMER FOR CAMERA

Yuichi Sato, Kanagawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1979, Ser. No. 11,437
Claims priority, application Japan, Mar. 15, 1978, 53-33962
Int. Cl.³ G03B *9/64, 17/00, 17/38*
U.S. Cl. 354—238 **8 Claims**



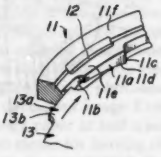
6. A camera comprising an electronically controlled self-timer, a self-timer switch for enabling operation of said self-timer, a self-timer operating member for actuating said self-timer switch and movable between an inoperative position and an operative position, said self-timer operating member being completely disposed within a recess formed in the camera body when said operating member is in said inoperative position, and said self-timer operating member extending out of said recess and in the same plane as the bottom surface of the camera body when in said operative position to stabilize said camera on a surface on which it is to be placed.

4,239,364

CAMERA BODY MOUNT

Kiyoshi Doi, Tokyo, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 953,368
Claims priority, application Japan Oct. 24, 1977, 142765
Int. Cl.³ G02B *7/02*; G03B *17/14*
U.S. Cl. 354—286 **12 Claims**



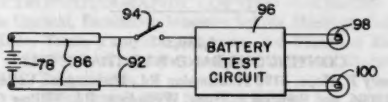
7. A one-piece, annular-shaped camera body mount of resilient material and having a first annular engagement surface facing in an outward direction and a plurality of radially-inward projecting and annularly spaced apart engagement claws whose lengths extend in the annular direction of said body mount, each said engagement claw having tapered configuration narrowing in axial direction along its length providing respective inwardly and outwardly facing surfaces thereof which are displaced radially inward with respect to said first annular engagement surface, said tapered configurations of all of said claws being tapered in the same annular direction, and means defining an elongated, annularly extending recess associated with each of said engagement claws to enhance the resilience of the claw in the axial direction in the vicinity of the recess.

4,239,365

ACCESSORY FOR ADAPTING CAMERAS TO SMALL FORMAT PHOTOGRAPHIC FILM UNITS

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 7, 1979, Ser. No. 36,813
Int. Cl.³ G03B *17/00, 17/26, 17/28*
U.S. Cl. 354—295 **13 Claims**



1. An accessory for adapting small format film packs to a camera, the camera having a film pack well with a front access opening, a floor and interior dimensions designed to complement exterior dimensions of a standard film pack containing relatively large format film units, the camera also having battery contacts presented on the floor of the film pack well in a position to be engaged by a sheet-like battery having terminals presented through the bottom of the standard film pack, said accessory comprising:

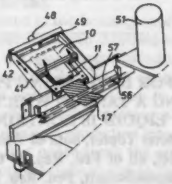
a housing having exterior planar dimensions complementing the interior dimensions of the film pack well of the camera and defining in part, a front-opening chamber to receive a small format film pack, said housing including a front wall to be positioned at the access opening of the film pack well and also defining means to receive and retain an electric storage battery, and means in said housing presented visibly at said front wall to indicate the charge status of a battery retained therein.

4,239,366

DAYLIGHT UNLOADING SYSTEM FOR MICROFICHE CASETTES

Leo N. Vackier, 's-Gravenwezel, and Lucien P. Van der Vliet, Hoboken, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Apr. 16, 1979, Ser. No. 30,530
Claims priority, application United Kingdom, Apr. 18, 1978, 15242/78
Int. Cl.³ G01N *23/04*
U.S. Cl. 354—310 **8 Claims**



1. A device for automatically unloading a microfiche cassette unit of the type having a bottom into which the microfiche film is placed, a cover hingedly connected to said bottom adjacent one end of the same for opening to permit introduction and removal of the microfiche film, the hinged end of said bottom at least partially projecting outwardly from the hinge axis, and disengageable latching means at the opposite ends of said bottom and cover for latching the same together when the cover is in closed position, which device comprises:

a housing capable of being light-tightly closed and having an opening via which a locked microfiche cassette unit may be introduced with the latched end in leading relation,

means within said housing for supporting the side edges of said cassette unit with said cover facing downward,

means within said housing for disengaging said latching means of said microfiche cassette unit when the latter is introduced into said housing, and

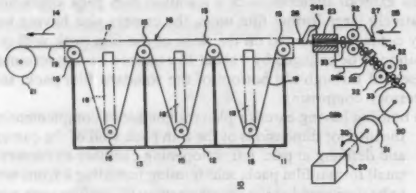
means operable within said housing to exert a downwardly directed force upon the outwardly projecting end portion of the cassette bottom opposite said latched end to positively pivot said bottom about said hinge axis relative to the cover and open the leading end of said cassette for release of said microfiche film.

4,239,367

CONTINUOUS-BAND WEB TRANSPORT

Henry F. Hope, 3192 Huntingdon Rd., Huntingdon Valley, Pa. 19006, and Stephen F. Hope, Wynadotte Rd., Willow Grove, Pa. 19090

Filed Mar. 14, 1979, Ser. No. 20,448
Int. Cl.³ G03D *3/13*
U.S. Cl. 354—319 **18 Claims**



1. The method of processing webs such as photographic film strips or papers through an automatic processing machine, comprising the steps of

threading a leader tape through the machine,

transporting the tape through the machine,

automatically attaching the leading end portion of a web to be processed to the tape at the inlet of the machine, while the tape is being transported through the machine,

automatically severing the tape at a point such that the portion of the tape which has been threaded through the machine remains attached to the web, the severing step being performed while the tape is being transported through the machine,

transporting the tape followed by the web through the machine, and

automatically attaching the portion of the leader tape which was severed from the web to the trailing end portion of the web when that trailing end portion reaches the inlet of the machine.

4,239,368

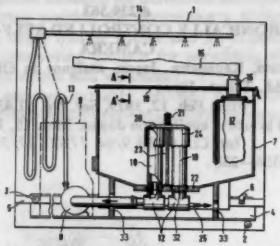
APPARATUS FOR DEVELOPING PRINTING PLATES COMPRISING A TANK IN WHICH PROCESSING LIQUID IS CONTAINED

Dieter Krause; Dieter Töpfer, both of Wiesbaden, and Wolfgang Salzburg, Kriftel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,790
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 7808341[U]
Int. Cl.³ G03D *3/06*
U.S. Cl. 354—325 **8 Claims**

1. In apparatus for developing printing plates, comprising at least one tank in which a processing liquid is contained and at least one filter means through which the processing liquid is passed on its flow path from or to the tank,

the improvement comprising means mounting the filter means within the tank without a filter housing of its own, means mounting the tank on carriage means which is supported on roller means and is adapted to be withdrawn from the apparatus, said tank means including lid means which covers the tank and through which a tube extends into the tank, said lid means being fixedly mounted in guide means in the apparatus, and further including track



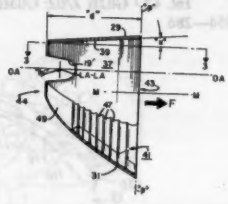
means against which said roller means are adapted to run to guide the carriage means which is displaceable together with the tank.

4,239,369

CAMERA AND REFLECTOR HAVING OFFSET OPTICAL AND MECHANICAL AXES

George J. English, Reading, and Robert E. Levin, South Hamilton, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 20, 1978, Ser. No. 961,894
Int. Cl.³ G03B *15/03*; F21V *7/06*
U.S. Cl. 362—348 **13 Claims**



1. A reflector for being fixedly oriented within a photographic camera to provide a controlled pattern of light from a light source located within said reflector on a planar subject field located an established distance from said camera, said reflector including an optical axis and comprising:

a plurality of internal specular reflective surfaces; and

at least one internal surface having a diffusing region thereon, said specular reflective surfaces and said surface having said diffusing region thereon defining an open end within said reflector such that the mechanical axis of said open end and said optical axis of said reflector pass through said open end and are oriented therein in an offset relationship, said specular surfaces and said diffusing region directly reflecting light from said light source toward said subject field such that said field receives light from both specularly and diffusely reflective surfaces.

4,239,370

ELECTROPHOTOCOPYING MACHINE FOR PRODUCTION OF COLORED PHOTOCOPIES

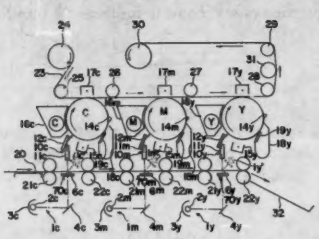
Takaji Kurita, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 15, 1977, Ser. No. 861,006

Claims priority, application Japan, Dec. 20, 1976, 51-153817; May 17, 1977, 52-57258

Int. Cl.³ G03G *15/01*

U.S. Cl. 355—4 **4 Claims**



1. An electrophotocopying machine comprising:

a plurality of means for production of colored images to be transferred onto a copy paper and respectively corresponding to particular color component portions of an original multicolor document to be copied, each of said production means including a movable photosensitive medium for forming thereon an image of one of said color component portions, focussing means at an exposure station adjacent said photosensitive medium for projecting colored light carrying the image of said original document onto said photosensitive medium, said focussing means including an optical fiber bundle made of a plurality of optical fibers for producing a focussed erect image and an odd number of mirrors for reflecting the image projected by said optical fiber bundle onto said photosensitive medium and developing means adjacent said photosensitive medium for developing the latent image formed on said photosensitive medium for transfer to copy paper;

original document transport means for moving said original document past said focussing means of the plurality of production means synchronously with the movement of the photosensitive medium in each production means;

said photosensitive medium being movable in a path at least part of which is substantially parallel to the path of the original document and in the same direction as the direction of movement of the original document;

image transfer means adjacent the photosensitive medium at a transfer station in each production means which is along said part of said path of said photosensitive medium for transferring said developed image from said photosensitive medium to copy paper at said transfer station;

copy paper transport means for moving copy paper past the transfer stations synchronously with the movement of the original document and in the same direction as the direction in which the original document is moved;

the respective ones of said plurality of production means being positioned next to one another in succession in a line for forming on said copy paper successive single color component portions, the distance between each of the successive exposure stations being greater than the distance between each of the successive transfer stations; and

adjustment means adjacent the path of the copy paper for adjusting the length of the path over which said copy paper is transported between said transfer stations of said production means, whereby said copy paper is synchronously and continuously moved in the same direction as said original document through said plurality of production means, said adjustment means comprising a roller, slide elements in which the opposite ends of said roller are rotatably mounted, said photocopying machine having fixed wall portions having slots therein in which said slide elements are slidable, and a screw and spring means on opposite sides of said slides, said screws being externally adjustable for moving said slides against the action of said springs.

4,239,371

ELECTROPHOTOGRAPHIC COPYING MACHINES

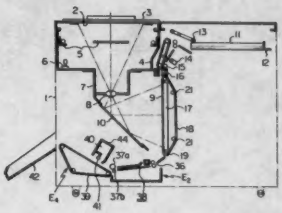
Yousuke Igarashi, Tachikawa; Minehiro Sakata, Hachioji; Shuichi Kudo, Tama; Yasuyuki Yokoyama, and Masanori Kai, both of Hachioji, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1978, Ser. No. 912,553

Claims priority, application Japan, Jul. 29, 1977, 52-91191; Jul. 29, 1977, 52-91192; Jul. 29, 1977, 52-101508; Jul. 29, 1977, 52-101510; Aug. 15, 1977, 52-108882; Aug. 15, 1977, 52-108884

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 CH **30 Claims**



1. An electrophotographic copying machine comprising:

housing means;

means for supporting an original to be copied comprising a transparent window disposed at the upper surface of the housing means, the transparent window being so constructed that its length is longer than the length of originals of various sizes to be copied;

original depressing plate means constructed and disposed to cover the transparent window and having a white undersurface facing the entire surface of said window;

means for positioning a sheet of photosensitive paper in a predetermined stationary position with its surface disposed at substantially a right angle to the surface of the transparent window;

means for feeding sheets of photosensitive paper one by one to the positioning means;

exposure means disposed in the housing means comprising a source of light constructed and disposed to illuminate the entire surface of the transparent window, and optical means constructed and disposed to expose the paper in said predetermined stationary position to the light image from the entire surface of the transparent window, said optical means comprising a projection lens and a reflective mirror disposed in that order along the optical passage so that the lens projects the light image to the paper via said mirror with the leading edge of the positioned paper substantially registered with the forward end of the light image projected from the original;

charging means for depositing an electrostatic charge on the surface of the paper while the paper is fed to the positioning means;

and control means for controlling the charging means to deposit the charge over a fixed length of the paper beginning with its leading edge and less than its total length, said fixed length being at least as long as the projected light image corresponding to the longest original to be copied, but shorter than the projected light image corresponding to the window;

whereby a first portion of the paper is exposed to the light image projected from the original, while a second portion of the paper adjacent the first paper portion is exposed to

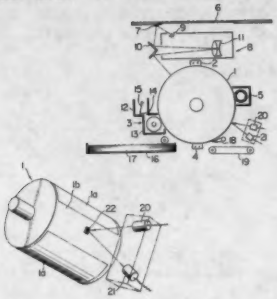
the light image projected from the marginal white surface portion of the depressing plate means adjacent said original, thereby preventing the formation of a black frame on the paper.

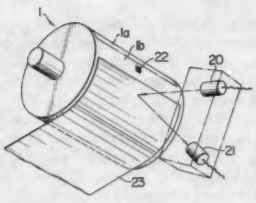
4,239,372

TRANSFER TYPE ELECTROPHOTOGRAPHIC COPYING MACHINE

Fumio Iwai, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 953,348
Claims priority, application Japan, Oct. 27, 1977, 52-129150
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **1 Claim**





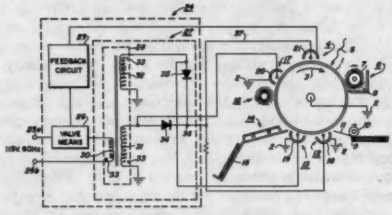
1. In a transfer type electrophotographic copying machine having a movable photosensitive member, change means therefor, a copy board adapted to support an original to be copied, means for illuminating said original, an optical system for producing an image of the illuminated original upon the charged photosensitive member, developing means for developing the image of the original on said member, means transferring the developed image to a transfer sheet of predetermined length in contact with said photosensitive member, means separating the transfer sheet from the photosensitive member, and cleaning means for cleaning said photosensitive member after the developed image has been produced, the improvment comprising an indexing image mounted adjacent one end of said copy board in the path of said illuminating means and said optical system and in longitudinal alignment with the original to be copied, whereby said indexing image is developed on said photosensitive member upon an area not occupied by the reproduced image of the original but in the path of said developing means and intermediate both the ends of the produced image of the original and of the ends of the transfer sheet, a single source of light directed against said photosensitive member in the path of both said reproduced image of the original and the reproduced image of said indexing image, said light source being positioned intermediate said separating means and said cleaning means relative to said photosensitive member, means measuring the amount of light reflected by said light source from said photosensitive member, said last means producing a voltage in accordance with the amount of reflected light, means controlling the amount of toner fed to said developing means, means for halting operation of said copying machine, first comparison means for comparing the voltage produced by said single source of light as reflected by said reproduced indexing image against a predetermined voltage standard which is adapted to actuate said toner controlling means, and a second comparison means for comparing the voltage produced by the same light from said single source that is reflected from said photosensitive member in the presence or absence of a transfer sheet which is adapted to halt operation of said copying machine if a transfer sheet is present.

4,239,373

FULL WAVE RECTIFICATION APPARATUS FOR OPERATION OF DC COROTRONS

Donald J. Weikel, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1978, Ser. No. 956,814
Int. Cl.³ G03G *15/02*
U.S. Cl. 355—14 CH **7 Claims**



1. An electrostatographic machine comprising

an imaging member including an imaging surface on which latent electrostatic images are formed including a conductive layer having means for coupling to an electrical potential,

development means for developing the latent image with a toner material to form a toner image corresponding to the latent image,

a DC transfer corotron including at least one wire spaced from the conductive layer of the imaging member for establishing a corona generating electric field between them for depositing electrostatic charge on the backside of a support member adjacent the imaging surface for transferring a toner image from the imaging surface to the front side of a support member and

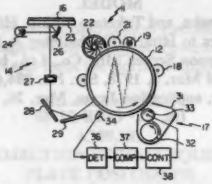
power supply circuit means coupled to the corotron for applying to it an unfiltered, full wave rectified AC voltage having an amplitude that exceeds a threshold level for corona generation from about 40 to about 80 percent of its wavelength for creating transfer and stripping electric fields capable of compensating for variations in a support member including variation in thickness and moisture content wherein transfer fields are those associated with the transfer of toner images to a support member and stripping fields are those associated with separating a support member from adjacent the imaging member after charge is deposited on the backside of the support member.

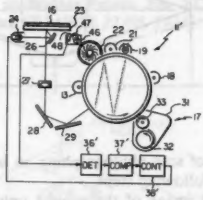
4,239,374

ELECTROSTATOGRAPHIC APPARATUS COMPRISING AUTOMATIC DOCUMENT TYPE DETERMINATION MEANS

Susumu Tatsumi; Masumi Ikesue; Masao Hosaka, and Nobuo Kasahara, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 7, 1978, Ser. No. 967,233
Claims priority, application Japan, Dec. 29, 1977, 52-160315
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 E 19 Claims





1. An electrostatographic apparatus including a photoconductive member, imaging means for focussing a light image of an original document onto the photoconductive member to form an electrostatic image and developing means for developing the electrostatic image to form a toner image, characterized by comprising:

sensor means for sensing an optical density of the document;

computing means for receiving an output of the sensor means and determining whether the document is a printed document or a photographic document in accordance with a predetermined criteria; and

control means for controlling a variable operating parameter of the apparatus in accordance with a first predetermined function of sensed optical density when the computing means determines that the document is a printed document or a second predetermined function of sensed optical density when the computing means determines that the document is a photographic document.

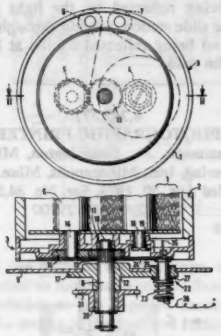
4,239,375

IMAGE CARRIER DRUM FOR AN ELECTROPHOTOGRAPHIC COPIER

Jürgen Eisbein, and Helmut Wegmann, both of Gerlingen, Fed. Rep. of Germany, assignors to Develop Dr. Eisbein GmbH & Co., Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 76,815
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840891
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—16 14 Claims

1. An intermediate image carrier drum for an electrophotographic copier, the drum being rotatably mounted in the copier and comprising a web of photoconducting material adapated to be arranged on an outer surface of the drum, a supply roll means for accommodating a supply of the photoconducting, a takeup roll means for receiving the photoconducting material from the supply roll means, the supply roll means and the takeup roll means being rotatably mounted in an interior of the drum, means for guiding the photoconducting material from the supply roll means out of the interior of the drum and along an outer surface of the drum to the takeup roll means, and means for coupling the takeup roll means to a drive means so as to enable a stepwise fed of the photoconducting material, characterized in that a pair of pin means are provided for rotatably mounting the drum in the copier, one of said pin means being circumferentially rotatable relative to the drum, a gear means is non-rotatably connected with said one of said pin



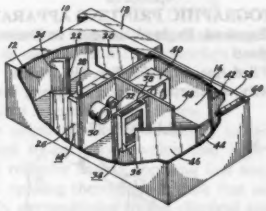
means, the coupling means includes a further gear means mounted on the takeup roll means in meshing engagement with said gear means, a free wheel means is interposed between said one of said pin means and the drive means, and in that said drive means is a reversible drive motor which, in a first direction of rotation drives another component of the copier and in an opposite direction of rotation drives said one of said pin means.

4,239,376

PRINT MAKER

Arne A. Wyller, Vinterbrinksvägen 51, S-13300 Saltsjöbaden, Sweden

Filed Jan. 18, 1979, Ser. No. 4,437
Int. Cl.[3] G03B *27/32, 27/52*
U.S. Cl. 355—27 8 Claims



1. An apparatus for making prints from slides or transparencies, comprising:

a housing having first, second and third compartments, each of said compartments being adjacent the other, and at least the first compartment being light tight;

a lens-shutter assembly disposed between the first and second compartments, defining an inner wall;

a slide station, having means for holding a slide or transparency to be copied, disposed between the second and third compartments, defining another inner wall;

the first compartment having means for attaching a film pack to an outer wall, in operable relation to the lens-shutter assembly, said compartment being light tight when said film pack is attached, and further having at least one

mirror optically interposed between the lens-shutter assembly and the film pack;

the third compartment having first and second portions partially separated by a baffle wall and optically connected by light reflecting and diffusing panels, and having means for removeably mounting an artificial light source at the end of the compartment optically opposite from the slide station, whereby an optical path may be established, originating in the third compartment, at the defined opposite end, being reflected by the light diffusing panels through the slide station, passing through the lens-shutter assembly and being reflected by the at least one mirror onto the film pack.

4,239,377

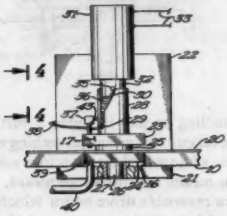
PHOTOGRAPHIC PRINTER

William R. Rasmussen, Jr., Bloomington, Minn., assignor to Lacht Engineering, Inc., Minneapolis, Minn.

Filed Apr. 30, 1979, Ser. No. 34,547

Int. Cl.³ G03B *29/00*

U.S. Cl. 355—29 **9 Claims**



1. In a photographic printer of the type wherein photosensitive photographic material is automatically advanced through an exposure area and having means for marking said photographic material intermediate adjacent exposure locations, the improvement wherein said marking means comprises means rotatable between a first position wherein said marking means is out of said exposure area and a second position wherein said marking means is in marking relation with photographic material within said exposure area.

4,239,378

PHOTOGRAPHIC PRINTING APPARATUS

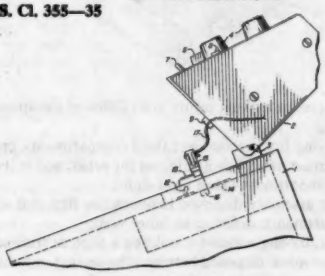
Keith Aston, Banstead, England, assignor to Durst (U.K.) Ltd., Epsom, England

Filed Apr. 30, 1979, Ser. No. 34,366

Claims priority, application United Kingdom, May 31, 1978, 25067/78

Int. Cl.³ G03B *27/76*

U.S. Cl. 355—35 **10 Claims**



1. A photographic printer having a plurality of controls, a control unit with some of said controls mounted thereon in continuously exposed positions, the control unit being pivotally mounted to the body of the printer for movement between a first position, in which selected controls for the printer are concealed between the control unit and the body of the printer, and a second position, in which said selected controls are exposed.

4,239,379

METHOD AND APPARATUS FOR SCAN-PHOTOGRAPHING A SUBJECT SUCH AS A MODEL

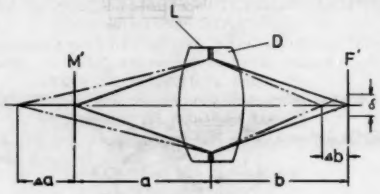
Yukio Tomita, Osaka, and Taketaro Nishio, Hiroshima, both of Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd. and Dainippon Screen Mfg. Co., Ltd., both of, Japan

Filed Mar. 8, 1978, Ser. No. 884,635

Claims priority, application Japan, Mar. 26, 1977, 52/33788

Int. Cl.³ G03B *27/68*

U.S. Cl. 355—52 **11 Claims**



1. A method of scan-photographing an image of a subject comprising the following steps:

projecting the image of the subject onto a sensitive film through an optical system having a lens and an aperture integrally incorporated therein; and

synchronously scan-photographing onto the sensitive film while said subject and said sensitive film are moved along parallel planes at right angles to the optical axis of said lens and in opposite directions to each other with respect to said optical system, said subject and said sensitive film being moved at predetermined speeds thereby producing an orthographically projected photograph of the image of said subject onto said sensitive film.

3. An apparatus for scan-photographing an image of a subject comprising:

an optical system having a lens and an aperture integrally incorporated therein;

a first moving means for movably positioning said subject in a first plane on one side of said optical system;

second moving means for movably positioning said sensitive film in a second plane, parallel to said first plane, and on the other side of said optical system, whereby the image of said subject is projected onto said sensitive film through said optical system; and

means for synchronously moving said first moving means and said second moving means at predetermined speeds within said first and second parallel planes at right angles to the optical axis of the lens and in opposite directions to each other with respect to said optical system.

4,239,380

IMAGE PROCESSING APPARATUS AND METHODS

Morton Goldsholl, c/o Goldsholl Associates, 402 Frontage Rd., Northfield, Ill. 60093

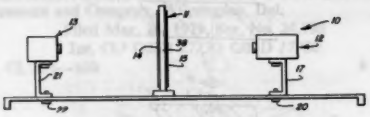
Filed Feb. 9, 1979, Ser. No. 10,514

Int. Cl.³ G03B *41/00, 27/68, 27/32*

U.S. Cl. 355—52 **14 Claims**

1. Image processing apparatus comprising: means defining a primary image plane from which light of non-uniform hue and intensity emanates so as to define a primary image, and an array of optical elements disposed in side-by-side relation to

each other and in closely adjacent relation to said primary image plane and arranged to develop from a primary image a resultant image divided into contiguous modular portions each



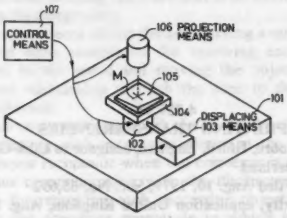
being produced by one of said optical elements from a portion of a primary image which is aligned therewith and which is substantially separate from the portions aligned with adjacent optical elements.

4,239,381

OPTICAL PROJECTION SYSTEM EQUIPPED WITH A PLATE POSITIONER

Michel Lacombat; Jean C. Graffin, and Robert Antoine, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 19, 1979, Ser. No. 49,500
Claims priority, application France, Jun. 23, 1978, 78 18835
Int. Cl.³ G03B *27/60, 27/42*
U.S. Cl. 355—53 **5 Claims**



1. An optical projection system equipped with a plate positioner of the type comprising a spherical bearing adjustable for height and angular position-setting, a plate supported by said spherical bearing and having a free face to be positioned in a reference plane, a lens defining said reference plane, and means for controlling the movements of said spherical bearing, wherein said optical system further comprises at least one set of extensible jacks which are rigidly fixed to the lens and the ends of which are located in the reference plane in the outwardly displaced position of the jacks, the control means being adapted to apply the free face of said plate against the outwardly displaced ends of said jacks and then to lock the spherical bearing in the position thus determined.

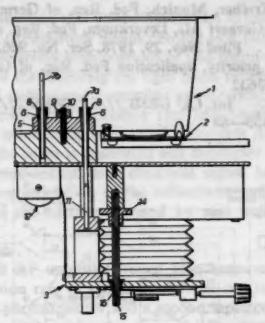
4,239,382

PHOTOGRAPHIC PRINTING OR ENLARGING APPARATUS

Keith Aston, Banstead, and John G. Long, Leatherhead, both of England, assignors to Durst (U.K.) Ltd., Epsom, England

Filed Apr. 30, 1979, Ser. No. 34,418
Claims priority, application United Kingdom, May 31, 1978, 25068/78
Int. Cl.³ G03B *27/52*; G02B *15/14, 7/04*
U.S. Cl. 355—63 **7 Claims**

1. Photographic reproduction apparatus comprising: a negative carrier, a lens stage movable towards and away from the carrier and yieldably urged in one of those directions and a positioning device comprising a single push rod releasably secured to the body for movement in the direction of its length and arranged to be extending to an operative position and secured against movement relative to the body and held in that position by means of a locking member which, when the push rod is in its operating position, can be moved into or out of locking engagement by rotating the positioning device about the axis of the push rod; means securing said positioning device to a part of the apparatus fixed relative to the negative carrier



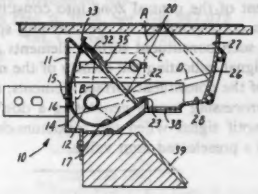
so that the push rod engages the lens stage, or a part of the apparatus connected to the lens stage, and fixes the position of the lens stage relative to the negative carrier to a position determined by the setting of the push rod relative to said body.

4,239,383

ILLUMINATION MEANS FOR ELECTROGRAPHIC REPRODUCTION

John A. Peterson, Hastings, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 17, 1979, Ser. No. 76,297
Int. Cl.³ G03B *27/54*
U.S. Cl. 355—67 **5 Claims**



1. An illumination means for concentrating and directing light within an electrographic reproduction machine comprising

a frame;

a light source mounted to said frame;

a primary elliptical reflector attached to said frame and positioned to partially envelop said light source, said primary reflector having opposing first and second sides with an opening therebetween such that said opening is generally perpendicular to the elliptical axis of said primary reflector, and being disposed to reflect a portion of the light emerging from said light source through said opening and onto a predetermined area;

a secondary elliptical reflector attached on said frame adjacent the second side of said primary reflector disposed to reflect toward the predetermined area the light emerging from said light source toward said secondary reflector and a portion of the light reflected from said primary which would not otherwise be incident at said predetermined area from said primary reflector;

a generally flat reflector fixed across a portion of the opening of said primary reflector adjacent its first side to reflect a portion of the light emerging from said light source that would not otherwise be incident on said predtermined area, back toward said primary reflector so as to be reflected toward said secondary reflector.

4,239,384

METHOD AND APPARATUS FOR AUTOMATICALLY RECOGNIZING PHOTOGRAPHIC ORIGINALS UNSUITABLE FOR COPYING

Helmut Treiber, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Nov. 29, 1978, Ser. No. 966,314

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753632

Int. Cl.³ G03B *27/52*; G01N *21/59*

U.S. Cl. 355—68 **23 Claims**

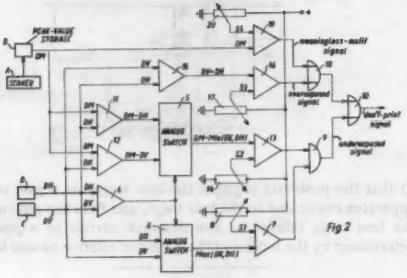


Fig. 2

20. An apparatus for automatically evaluating photographic originals with respect to suitability for copying, comprising, in combination,

means subdividing the image-bearing surface of the originals into a central zone and at least one zone surrounding the central zone;

photoelectric scanning means of the type producing a small scanning spot operative for breaking down the image content of the central zone into constituent surface elements corresponding to the scanning spot and deriving from such constituent surface elements a maximum-density signal indicating the density of the maximum-density one of the constituent surface elements; and

signal-processing means generating a don't-copy-meaningless-motif signal when the maximum-density signal exceeds a preselected limit value.

4,239,385

PHOTOGRAPHIC COPYING MACHINE WITH MEANS FOR VARYING EXPOSURE ACROSS THE SURFACE OF THE ORIGINAL COPIED

Friedrich Hujer, Grunwald, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 9, 1979, Ser. No. 37,455

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820965

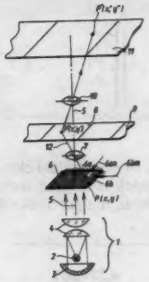
Int. Cl.³ G03B *27/72*

U.S. Cl. 355—71 **13 Claims**

1. In a photographic copying machine which utilizes light from a projector to print an image of a transparent original upon a photosensitive medium by projecting the light through the original to impinge upon the medium after passing through the original, an improvement designed to individually vary image intensity of extremely small subregions of the image printed on the medium when the subregions in aggregate form the image in its entirety, comprising:

an extremely large number of extremely small variable-density grey filters arranged in an array, each such grey filter being individually variable and corresponding to one of the subregions of the image, the array being located intermediate the projector and the original to individually vary intensity of light projected through corresponding subregions of the original; and

a control connected to each of the grey filters and varying the densities thereof to individually vary intensity of each



subregion of the image and thereby, in the aggregate, vary the intensity of the image in its entirety.

4,239,386

PRINTING TRANSPARENCIES

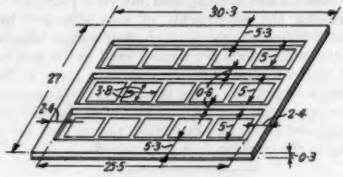
Michael H. Moore, Ilford, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 10, 1979, Ser. No. 65,692

Claims priority, application United Kingdom, Aug. 10, 1978, 32879/78

Int. Cl.³ G03B *27/44, 27/04*

U.S. Cl. 355—77 **4 Claims**



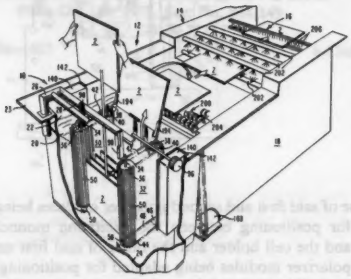
1. A method of printing a set of mounted transparencies which comprises placing in a predetermined manner a first frame loaded with a first set of mounted transparencies over a sheet of print material and effecting a first exposure, taking up the said first frame and placing in a predetermined manner a second frame loaded with a second set of mounted transparencies over the same sheet of print material and effecting a second exposure, the said second frame being so constructed that each of the mounted transparencies when loaded thereon and placed over the print material is over an area thereof which is masked during the first exposure either by the borders of the mounts of the first set of mounted transparencies or by the framework of the frame and the areas of the print material which are exposed during the first exposure are masked during the second exposure by the borders of the mounts of the second set of transparencies or by the framework of the said second frame.

4,239,387

COMPACT TRANSPORT APPARATUS ESPECIALLY FOR REMOVAL OF MATERIAL BY ULTRASONIC ASSIST

James M. Ahrens, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 28, 1979, Ser. No. 24,799
Int. Cl.[3] G03B 27/30; G03D 17/00
U.S. Cl. 355—100 5 Claims



4. An apparatus for transporting a series of objects through a treatment zone comprising:

a. a structure defining the treatment zone having a feed side and a discharge side;

b. conveyor means within the zone having a series of closely spaced open receptacles for receiving each successive object in the series and moving the objects in closely spaced relationship through the zone to the discharged side thereof;

c. means communicating with the feed side of the zone for transferring each successive object in the series into a conveyor receptacle when the conveyor is stopped;

d. means communicating with the discharged side of the zone for removing each successive object in the series from the conveyor receptacle in which it was passed through the zone when the conveyor is stopped and discharging it from the zone; and

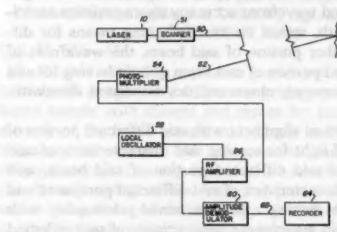
e. means for stopping the movement of the conveyor and simultaneously actuating the feed transfer means and the discharge means and further means for resuming the movement of the conveyor upon the completion of the feed transfer and discharge functions.

4,239,388

TIME DOMAIN LASER RECONNAISSANCE TECHNIQUE

Leland D. Green, Sierra Madre, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1974, Ser. No. 494,008
Int. Cl.[3] G01C 3/08; H04N 7/00
U.S. Cl. 356—5 1 Claim



1. Apparatus for producing a video signal representing the reflectivity of a surface remote from the source of a scanning light beam, said surface having vertical details, comprising:

a mode-locked laser for generating a pulsed light beam having a predetermined repetition rate and high harmonic content,

means for transmitting said pulsed light beam to said remote surface, said transmitting means causing said pulsed light beam to successively scan portions of said remote surface,

a photodetector for receiving the light beam reflected from said scanned surface and generating an electrical signal in response thereto, the repetition rate and phase of said pulsed light beam being substantially constant during the time said light beam is generated and thereafter received by said photodetector, said electrical signal having an amplitude corresponding to the reflectivity and vertical geometry of the surface scanned by said pulsed light beam,

a local oscillator,

a narrow band RF amplifier, tuned to a harmonic of the pulse repetition rate of said laser, having one input coupled to said photodetector and a second input coupled to said local oscillator whereby a signal is produced at the output of said amplifier having an intermediate frequency equal to the difference between the photodetector output frequency and the local oscillator frequency,

means coupled to said amplifier output for amplitude demodulating said intermediate frequency signal for generating said video signal, and

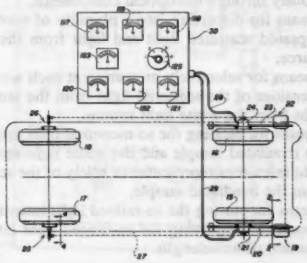
means coupled to said demodulating means for recording said video signal.

4,239,389

VEHICLE WHEEL AND BODY ALIGNMENT DIAGNOSING SYSTEM

William J. Hollandsworth, Town and Country, and Dean O. Grubbs, Manchester, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Dec. 6, 1978, Ser. No. 967,072
Int. Cl.[3] G01B 11/26
U.S. Cl. 356—155 20 Claims



1. Apparatus for use in finding the alignment characteristics of first and second sets of vehicle wheels relative to each other and with respect to the vehicle body, said apparatus comprising: alignment scanning means carried by each wheel of a first set for projecting a beam of radiant energy transversely and longitudinally of the vehicle body; radiant energy reflecting means selectively carried by each of a second set of wheels and the adjacent vehicle body in position for reflecting the radiant energy beams projected longitudinally from said scanning means; first signal generating means carried by each of said scanning means positioned to be energized by the transversely projected radiant energy beam; second signal generating means carried by each of said scanning means positioned to be energized by the longitudinally projected radiant energy beam; and signal receiving and computing means connected to said first and second signal generating means carried by each of said

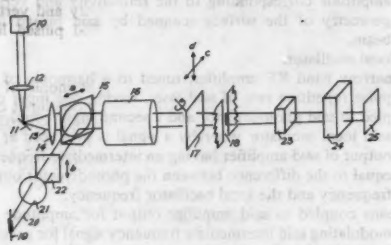
scanning means for calculating wheel and body alignment characteristics.

4,239,390

METHOD OF OBTAINING HIGH RESOLUTION LIGHT SCATTERING SPECTRA

James R. Scherer, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 4, 1979, Ser. No. 35,965
Int. Cl.[3] G01J 3/44, 3/30
U.S. Cl. 356—307 11 Claims



8. An apparatus for obtaining by means of optical components a high resolution scattering spectrum from irradiation of a sample without disturbing the position of the sample, said spectrum being free of artifacts due to the presence of said optical components, which comprises in combination

(a) means for irradiating the sample with monochromatic light to produce scattered light,

(b) means for collecting the scattered light from the irradiated sample,

(c) a white light source of known emissivity,

(d) means for polarizing the light from the white light source,

(e) means for passing the scattered light from the irradiated sample and the light from the white light source simultaneously through the optical components,

(f) means for dispersing into a plurality of wavelengths the so-passed scattered light and light from the white light source,

(g) means for selectively measuring at each wavelength the intensities of the scattered light from the sample and the light from the white light source,

(h) means for ratioing the so-measured light intensities from the irradiated sample and the white light source to yield light intensities representative solely of the scattered light from the irradiated sample,

(i) means for storing the so-ratioed light intensities, and

(j) means for displaying the so-ratioed light intensities as a function of wavelength.

4,239,391

MODULAR MOTORIZED POLARIZERS FOR A SPECTROFLUOROMETER

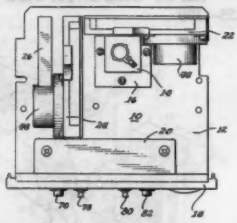
David L. Lessner, Baltimore; James H. Macemon, Severna Park; George M. Coker, Jr, and Charles E. Hodgson, both of Silver Spring, all of Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 12, 1979, Ser. No. 29,317
Int. Cl.[3] G01J 3/30, 4/00
U.S. Cl. 356—318 19 Claims

1. In a spectrofluorometer including an excitation monochromator, an emission monochromator and a base supporting a cell holder through which a light beam is transmitted, the improvement comprising, in combination:

a first polarizer module including a polarizing filter that is rotatable and including a motor drive for rotating the filter, said first polarizer module having plug-in means for rapid plug-in connection to said base;

a second polarizer module including a polarizing filter that is rotatable and including a motor drive for rotating the filter, said second polarizer module having plug-in means for rapid plug-in connection to said base; and



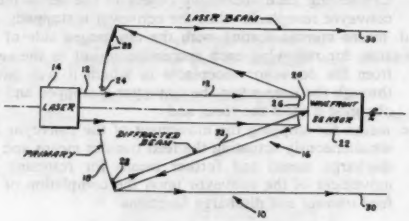
one of said first and second polarizer modules being adapted for positioning between the excitation monochromator and the cell holder and the other of said first and second polarizer modules being adapted for positioning between the cell holder and the emission monochromator.

4,239,392

GRATING OUTPUT WAVEFRONT SAMPLING SYSTEM

Richard H. Pohle, Monta Vista, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 7, 1978, Ser. No. 922,602
Int. Cl.[2] G01B 9/02; G02B 5/18
U.S. Cl. 356—354 10 Claims



1. A grating output wavefront sampling system comprising means for providing a quasi-monochromatic beam of light and a beam expander in optical alignment with said quasi-monochromatic beam of light, said beam expander having:

(a) means in optical alignment with said beam of light for diverging and directing said beam of light,

(b) means in optical alignment with said divergent beam of light for reflecting a portion of said beam of light, the wavefront of said reflected portion of said beam of light having tilt and wavefront accuracy characteristics associated therewith, means on said reflecting means for diffracting another portion of said beam, the wavefront of said diffracted portion of said beam of light having tilt and wavefront accuracy characteristics associated therewith, and

(c) means in optical alignment with said diffracted portion of said beam of light for sensing said characteristics of said wavefront of said diffracted portion of said beam, said wavefront characteristics of said diffracted portion of said beam of light having a predetermined relationship with respect to said wavefront characteristics of said reflected portion of said beam of light whereby sensing said wavefront characteristics of said diffracted portion of said beam

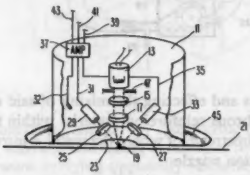
of light provides information about said wavefront characteristics of said reflected portion of said beam of light.

4,239,393

OPTICAL DENSITY SCANNING HEAD

Philip E. Tobias, 1872 Watson Rd., Abington, Pa. 19001

Filed Oct. 13, 1978, Ser. No. 951,149
Int. Cl.³ G01N *21/27*
U.S. Cl. 356—407 **6 Claims**



1. A scanning head for transmitting white light to an area of a sheet of material, which area is characterized by a single color, in order to have part of the transmitted light absorbed thereby and the remainder of said light reflected and monitored so that said color and its optical density can be determined comprising in combination: housing means having a substantially hollow center section; a source of white light disposed in said hollow center section; a lens arrangement disposed in said hollow center section to direct light from said light source to a small section of said area characterized by a single color; first, second and third light filter means disposed in said housing a substantial distance one from the other and further disposed to simultaneously receive said reflected light and each respectively formed to only pass a different one of red, green and blue light reflected from said area characterized by said single color; and first, second and third photosensitive devices respectively disposed to receive the filtered light from a different but associated one of said first, second and third light filter means to produce simultaneously three electrical signals each of which is indicative of the optical density of a different one of the colors cyan, magenta and yellow which is present at said area.

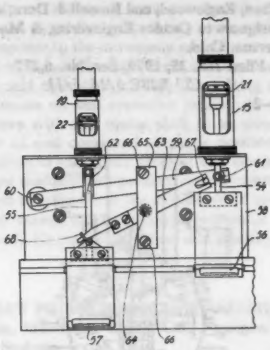
4,239,394

LIQUID ANALYZING APPARATUS

Poul E. Aegidius, Helsinge; Miloslav Zakora, Hillerod, and Jorgen F. Nielsen, Allerod, all of Denmark, assignors to A/S Foss Electric, Hillerod, Denmark

Filed Apr. 7, 1978, Ser. No. 894,389
Claims priority, application U.S.S.R., Apr. 8, 1977, 2480802
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—436 **17 Claims**

1. A liquid analyzing apparatus for determining the fat content of milk samples or the like, comprising means for mixing a liquid sample with diluent and means for homogenizing the mixture of the liquid sample and diluent and for passing the homogenized mixture to photometric measuring means adapted to measure a constituent of the sample in the mixture, the homogenizing means and the photometric measuring means being arranged within a body which is made from a heat conductive material and which has means for thermostatically controlling the temperature of said body, said mixing means comprising a dosage piston pump for the diluent and a dosage piston pump for the liquid sample, the pistons of said pumps being interconnected by a lever system so as to control movement thereof in accordance with a predetermined ratio or relationship.

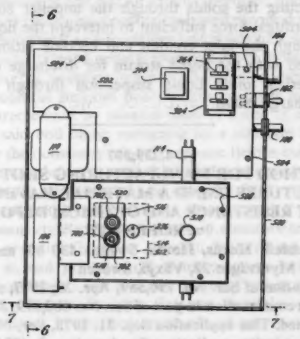


4,239,395

RADIOGRAPHIC IMAGING SYSTEM QUALITY MONITOR

James E. Modisette, 12108 Radium, San Antonio, Tex. 78216

Filed Aug. 7, 1978, Ser. No. 931,589
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—443 **12 Claims**



1. A radiographic imaging quality monitor system comprising:

first exposure means for exposing a portion of a photosensitive material to a first intensity of even illumination,

second exposure means for exposing a second portion of said photosensitive material to a second intensity of even illumination,

measuring means including only a single light source for measuring the developed density of the first and second portion of said photosensitive material,

signal processing means responsive to said measuring means for simultaneously evaluating the density of said first portion and said second portion,

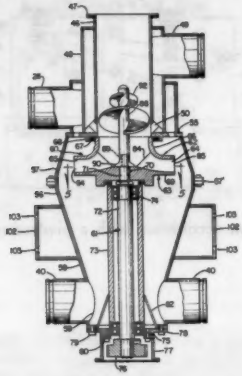
display means responsive to said signal processing means for displaying the density of said first and second portions,

4,239,396

METHOD AND APPARATUS FOR BLENDING LIQUIDS AND SOLIDS

Jorge O. Arriban, Englewood, and Russell J. Dorn, Aurora, both of Colo., assignors to Condor Engineering & Manufacturing, Inc., Henderson, Colo.

Filed Jan. 25, 1979, Ser. No. 6,277
Int. Cl.³ B28C 5/16, 5/13
U.S. Cl. 366—2 19 Claims



1. The method for continuously intermixing solid particulate material with a liquid comprising the steps of:

axially directing a liquid stream through a liquid conduit in outer concentric relation to a solids inlet conduit; and

axially directing solid particulate material through the inner solids conduit and discharging the solid particulate material from the solids conduit into the inlet of an impeller zone which is isolated from the liquid stream, and radially directing the solids through the impeller zone under a centrifugal force sufficient to intercept the liquid flowing through the inlet conduit and become intimately intermixed with the liquid stream for discharge of the solid materials under liquid suspension through a common discharge outlet.

4,239,397

METHOD FOR MANUFACTURING SHOTCRETE STRUCTURES USING A MATERIAL HAVING HIGH IMPACT RESISTANCE AND OPTIMUM DEFORMATION PROPERTIES

Bertil Sandell, Hovås, Hovås, Sweden 430 80, and Göte Liljegren, Myntvägen 22, Växjö, Sweden

Continuation of Ser. No. 790,389, Apr. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 600,079, Jul. 29, 1975, abandoned. This application Sep. 21, 1978, Ser. No. 944,312
Claims priority, application Sweden, Aug. 2, 1974, 7409963
Int. Cl.³ B05D 1/12
U.S. Cl. 366—3 7 Claims

1. In a method of manufacturing shotcrete structures using a material having high impact resistance and optimum deformation properties, comprising in combination the steps of:

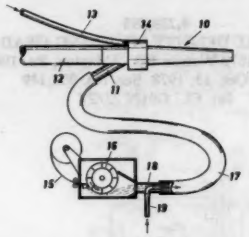
A. pneumatically conveying a dry mixture of a water-activatable, binding agent and ballast material to an application nozzle having an outlet,

B. mixing said dry mixture with a fibrous reinforcing material,

C. introducing water into the application nozzle upstream of the nozzle outlet and activating the binding agent in the mixture which is to be pneumatically projected at a high velocity on to a surface, and

D. spraying the activated mixture of water activated binding material, ballast material and fibrous reinforcing material onto a portion of a shotcrete structure being produced, the improvement comprising:

E. introducing said dry mixture and said fibrous reinforcing material into the application nozzle in separate independent streams and effecting the mixing of said dry mixture with said fibrous reinforcing material within the application nozzle upstream of where the water is introduced into the application nozzle.

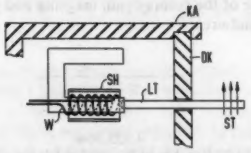


4,239,398

DEVICE FOR ATTENUATING NOISE EMITTED TO THE ENVIRONMENT BY NOISE-GENERATING AGGREGATES HAVING SIMULTANEOUS DISSIPATION OF HEAT

Wilhelm Reitner, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 923,994
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1977, 2739886
Int. Cl.³ B41J 3/12
U.S. Cl. 400—124 3 Claims



1. A device for the attenuation of noises emitted to the environment by a mosaic printer writing head and for simultaneously dissipating heat, comprising:

a plurality of magnet systems and respective printing needles, each of said magnet systems comprising a magnet, a pivotally mounted armature carrying a respective printing needle, and a winding about a portion of said magnet energizable to cause said magnet to attract said armature;

a pot-shaped housing of noise-attenuating material housing said plurality of magnet systems;

a cover of noise-attenuating material sealing said housing;

a U-shaped shroud of heat conducting material surrounding and common to all of said windings of said plurality of magnet systems; and

a heat-conducting conduit comprising a heat-conducting line connected to said shroud and extending through and out of said housing.

4,239,399

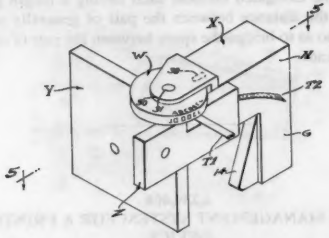
PORTABLE SHRINK TUBING MARKER GUN

Dick E. Johnstun, 27472 Via Olmo, Misson Viejo, Calif. 92675

Filed Feb. 22, 1979, Ser. No. 14,049

Int. Cl.³ B41J *1/52*

U.S. Cl. 400—128 **30 Claims**



1. A portable tubing marker for transferring material from a printing tape and onto said tubing in flattened form, and including; a grip means carrying opposedly shiftable character and platen members and a manually operable lever actuated drive means shifting said members together and having right angularly geared drive and secondary shafts carrying and alternately rotating separate tubing and tape drive rollers, a supply of the flattened tubing engaged with and alternately advanced by said tubing drive roller and issuing therefrom in juxtaposed relation to and above the platen member, and a supply of the printing tape engaged with and alternately advanced by said tape drive roller and issuing therefrom in normal relation over one side of the tubing and in juxtaposed relation to and below the character member, actuation of the drive means opposedly shifting said character and platen members pressing the tape against the tubing for impression of the indicia of the character members thereon.

4,239,400

ELECTRONICALLY CONTROLLED PRINTING UNIT

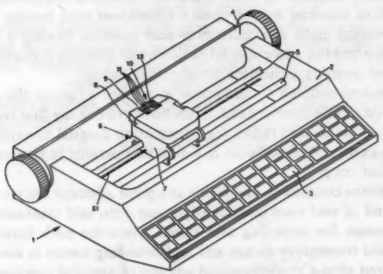
Alberto Giolitti, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Jun. 28, 1978, Ser. No. 920,076

Claims priority, application Italy, Jul. 29, 1977, 68772 A/77

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **27 Claims**



16. In a printing device comprising a platen, a printing assembly movable on a guide along the platen and including a type bearing element and a hammer for printing a desired type of said type bearing element, and actuating means for controlling the selection of said desired type and the operation of said hammer and a given number of functions of said assembly, the combination comprising kinematic chains actuatable for operating said hammer and the given number of functions of said printing assembly, a motor shaft for selecting the types of said type bearing element, a movable mechanical store including a plurality of command elements associated to said hammer and to said given functions and movable between an inoperative and an operative position, at least one transducer disposed adjacent to said store for cooperating with said command elements in response to the movement of said store, and means actuating said transducer for selectively moving said command elements into said operative position for causing one of said command elements on said operative position to couple said mechanical store with said motor shaft to be moved thereby and the other of said command elements positioned on said operative position to selectively connect said kinematic chains with said motor shaft for the operation of said hammer and said given functions in response to the movement of said mechanical store, and means for supporting said motor shaft, said hammer and said kinematic chains on said printing assembly.

4,239,401

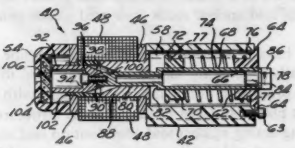
IMPACT PRINTER HAMMER ASSEMBLY

John R. Veale, Manhattan Beach, Calif., assignor to Plessey Peripheral Systems, Irvine, Calif.

Filed Nov. 1, 1978, Ser. No. 956,736

Int. Cl.³ B41J *1/08, 9/00*

U.S. Cl. 400—144.2 **10 Claims**



1. A hammer assembly for a high speed impact printer, comprising:

a solenoid having a coil and an axially apertured pole piece, said pole piece having a conically shaped recessed surface;

an axially movable armature within said solenoid, said armature having a tapered conical leading surface substantially parallel to the recessed surface of said pole piece, said parallel conical surfaces producing a constant magnetic field characterized by parallel lines of force of uniform density, said coil being energized by a constant current whereby the constancy of said magnetic field is enhanced, said armature being propelled toward said pole piece by the magnetic attraction of said constant field when said coil is energized by said constant current; and

hammer means rigidly connected to said armature to form a unitized armature/hammer element, for striking a print element in said printer, said hammer means being uniformly accelerated due to said constant field and axially moved a substantially long distance through said pole piece armature by the movement of said armature.

4,239,402

DETACHABLE WIRE MATRIX PRINT HEAD MOUNTING STRUCTURE

Friedrich Jung, Erlangen, and Wilfried Rettke, Nuremberg, both of Fed. Rep. of Germany, assignors to Triumph Werke Nurnberg A.G., Nuremberg, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,225

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800390

Int. Cl.³ B41J *3/12, 29/00*

U.S. Cl. 400—175 **1 Claim**

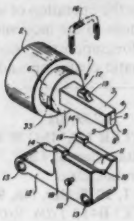
1. Mounting structure for securely removably holding a matrix print head with its planar printing face opposite a parallel printing plane comprising

a support structure having a profile defined by a first planar

surface parallel to said printing face and intersecting planar surfaces at right angles to said first planar surface,

said matrix print head having a profile complementary to the profile of said support structure whereby said matrix print head is supported against movement in the direction of said parallel printing plane by engagement with said first planar surface of said support structure and against lateral movement by said intersecting planar surfaces of said support structure,

anchor studs extending outwardly from said support means,



said matrix print head having an abutment located at a distance from said planar printing face greater than the distance of said anchor studs from said planar printing face, and

a spring having its ends secured to said anchor studs and resiliently embracing said matrix print head to urge said matrix print head into mating engagement with said intersecting planar surfaces of said support structure, and

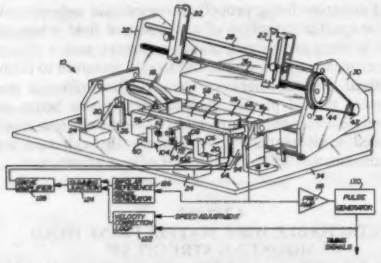
said spring acting against said abutment on said matrix print head to urge said matrix print head toward said first planar surface on said support structure.

4,239,403

COUNTERBALANCED BIDIRECTIONAL SHUTTLE DRIVE

Jerry Matula, Westminster; Glen R. Radke, Fountain Valley, and Gordon B. Barrus, El Segundo, all of Calif., assignors to Printronix, Inc., Irvine, Calif.

Filed Jan. 30, 1979, Ser. No. 7,789
Int. Cl.³ B41J *19/04, 19/14*
U.S. Cl. 400—322 **17 Claims**



1. An arrangement for bidirectionally driving a printing mechanism relative to a printable medium in a line printer comprising the combination of:

a pair of circular elements mounted in spaced-apart relation for rotation about a pair of generally parallel axes;

a band formed into an endless loop encircling a portion of each of the circular elements and extending between the circular elements on opposite sides of the circular elements;

a printing mechanism coupled to the band between the circular elements on one side of the circular elements;

an elongated element coupled to the band between the circular elements on the other side of the circular elements;

means for defining opposite limits of movement of the band; and

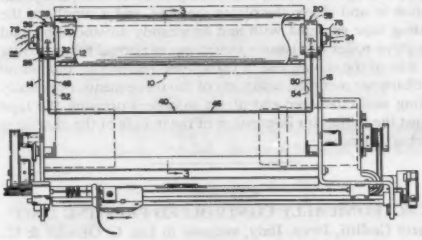
means for bidirectionally driving the band between the opposite limits of movement thereof so as to bidirectionally drive the printing mechanism, the printing mechanism and the elongated element each having a length greater than the distance between the pair of generally parallel axes so as to bridge the space between the pair of circular elements.

4,239,404

PAPER MANAGEMENT SYSTEM FOR A PRINTING DEVICE

Fred A. DeFilipps, Maitland; Roy O. Lipper; Luther R. Winters, Jr., both of Orlando; Larry A. Nordstrom, Oviedo, and Daniel J. Szechy, Sanford, all of Fla., assignors to Scope Data Incorporated, Orlando, Fla.

Filed Aug. 17, 1978, Ser. No. 934,597
Int. Cl.³ B41J *11/26*
U.S. Cl. 400—613 **9 Claims**



1. In a printing device having a frame and including a rotatable paper drive roller and a fixed paper guide positioned adjacent said drive roller to form a path between said drive roller and said paper guide for passing a length of paper, and a dispenser coupled to said frame for rotatably supporting a length of material wound upon a cylindrical core having first and second ends, said core plus said material having a first radius when full and a second radius when material is depleted, a paper quantity indicating system comprising:

a. means coupled to said frame at a point adjacent the first end of said core at a radial position between the first radius and the second radius for transmitting a signal toward the second end of said core in a direction parallel to the axis of said core;

b. means coupled to said frame at a point adjacent the second end of said core in axial alignment with said transmitting means for detecting said signal when the path between said transmitter means and said detecting means is uncovered after a predetermined amount of material remains on said core;

c. a groove in said drive roller at a first position;

d. an aperture in said paper guide adjacent said first position; and

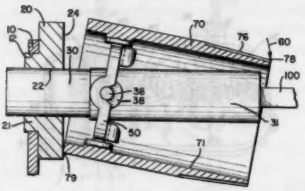
e. indicator means coupled to said printing device at a location adjacent said aperture and having an arm biased to a first position through said aperture into said groove when paper is absent from said path, said arm being deflected into a second position when said groove is covered by paper within said path.

4,239,405

FORM ALIGNING KNOB

Arthur C. Van Horne, Santa Clara, and James E. Young, La Honda, both of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Filed Jan. 11, 1979, Ser. No. 2,694
Int. Cl.³ B41J 15/00
U.S. Cl. 400—616.1 3 Claims



1. A form aligning mechanism for use in a printing device, such as a high speed printer, said printing device comprising a frame and a drive means for rotating a driven shaft so as to advance a form in said printing device, said form aligning mechanism comprising:

a bearing means coupled to the frame of said printing device;

a hub member having a bore therein to receive a portion of said driven shaft, said hub member being connected to said driven shaft so as to rotate as a unit therewith and said hub member mounted for rotation in said bearing means;

a knob means concentrically mounted with respect to said driven shaft and said hub member and joined to said hub member by a universal joint;

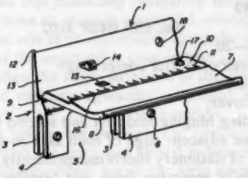
said knob means further being biased so as to normally contact said bearing means around the entire perimeter of one end of said knob means such that application of a force to the other end of said knob means pivots said knob means about a point on said one end of said knob means which point moves radially inwardly toward said driven shaft to mechanically translate said force to a longitudinal displacement of the driven shaft thereby disengaging said driven shaft from said drive means and enabling said driven shaft for rotation in response to rotation of said knob means.

4,239,406

HINGED SINGLE PIECE ALIGNING SCALE FOR TYPEWRITERS

Otto Glück, Schoneck, and Norbert Jakovski, Frankfurt, both of Fed. Rep. of Germany, assignors to Triumph Werke Nurnberg A.G., Nurnberg, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,531
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829935
Int. Cl.³ B41F 13/10
U.S. Cl. 400—645 5 Claims



1. A single piece paper guide device comprising

a body portion having an upper edge and a lower edge,

means on said body portion for securing said device to a typewriter,

a paper guide portion,

an integral web hingedly securing said paper guide portion to said body portion located between the upper and lower edges of said body portion whereby said guide portion may be pivoted from a working position parallel to and adjacent said body portion to a service position at an angle to said body portion, and

aligning scale indicia located on the side of said paper guide portion facing said body portion,

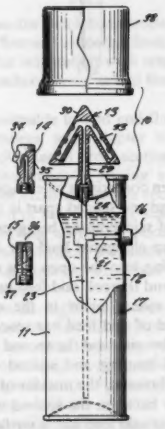
said indicia being so positioned as to be below the upper edge of said body portion when said paper guide portion is in working position.

4,239,407

HARD TO REACH PLACES SPRAY CAN

Hester L. Knight, 788 Bayview Ave., Amityville, N.Y. 11701

Filed Feb. 22, 1979, Ser. No. 14,239
Int. Cl.³ A46B 11/02
U.S. Cl. 401—190 1 Claim

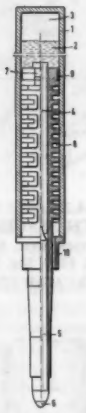


1. A hard-to-reach-places spray can, comprising in combination, an aerosol pressure can, containing a liquid for being dispensed, a dispensing pipe extending vertically outward of a top of said can, an outward end of said pipe being threaded and selectively fitted with one of a plurality of different design nozzles screwed thereupon, and a longitudinally intermediate portion of said pipe inside said can having a shut-off valve; a pushbutton on a side of said can pushing against one end of a pin so as to hold open said valve, said valve comprising an annular groove around said pin for selective alignment with a central opening of said pipe; and a first of said nozzles comprising an umbrella-like, conical shaped head which at its apex is integral with an upper end of a tubular stem, said head being made of a knitted sponge material, a plurality of radially extending passages inside said head, a radially inward end of said passages communicating with an upper end of a central opening of said stem, and a plurality of spray holes along said radially extending passages.

4,239,408
FOUNTAIN PEN WITH IMPROVED INK FLOW CONTROL

Otto Mutschler, Ludolf-Krehl-Str. 21, D-6900 Heidelberg, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,730
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808910
Int. Cl.³ B43K 7/02
U.S. Cl. 401—217 8 Claims

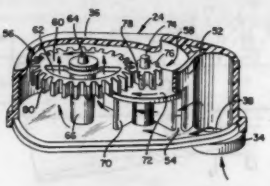


1. In a fountain pen comprising an elongated housing having first end and a second end spaced apart in the elongated direction, the first end of said housing being open and the second end being closed, an elongated feed bar located within said housing and extending into the open first end of said housing toward the second end thereof, said feed bar having a first end and a second end spaced apart in the elongated direction thereof, the first end of said feed bar spaced outwardly from the first end of said housing and the second end of said feed bar located within said housing and spaced from the first and second ends of said housing, the interior of said housing forming an ink reservoir between the second end of said housing and the second end of said feed bar, a writing point projecting outwardly from the first end of said feed bar in the direction away from said housing, means for supplying ink from said ink reservoir to said writing point, at least said first feed bar forming a first passageway for admitting atmospheric air into the ink reservoir for replacing the ink supply from said ink reservoir to said writing point, wherein the improvement comprises that said means for supplying ink comprises an ink feeding member in communication with said writing point, and an elongated flow controlling member extending through said feed bar in the elongated direction thereof and connecting said ink feeding member and said ink reservoir, said ink feeding member having an effective flow cross section therethrough transversely of the elongated direction of said feed far and said flow controlling member having an effective flow section therethrough transverse of the elongated direction of said feed bar with the effective flow section of said flow controlling member being smaller than the effective flow section of said ink feeding member.

4,239,409
BRUSH ASSEMBLY WITH PULSATING WATER JET DISCHARGE

Leonard Osrow, Great Neck, N.Y., assignor to Osrow Products Co., Inc., Glen Cove, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,999
Int. Cl.³ A61H 9/00
U.S. Cl. 401—281 17 Claims



1. A brush assembly which comprises:
a brush block member having a face, a multiplicity of bristles mounted on said face and defining a clear space;
a discharge device, said discharge device being situated in said space;
said discharge device comprising a hollow housing, said housing having a first water inlet at one end and means comprising at least two discharge orifices spaced apart from said first inlet in a symmetrical pattern about an axis normal to said face;
a valve member mounted in said housing for rotation about said axis, said valve member having a valve port establishing fluid communication sequentially between said first inlet and one of said orifices, then with portions of both of said orifices, then with the other of said orifices and then with portions of both orifices in a repeating cycle;
means in said housing defining a water flow passage between said first inlet and said valve port for conducting water from said first inlet to said valve port, said water flow passage including a constricted passageway in communication with said first inlet;
a second water inlet situated in said brush assembly and in fluid communication with said first water inlet, said second inlet including means for attachment to a pressurized water line;
turbine means in said housing and situated in said water flow passage immediately downstream of said constricted passageway; and
means kinematically connecting said turbine means to said valve member for rotating said valve member in response to the flow of water through said flow passage.

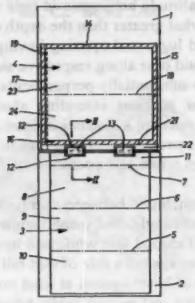
4,239,410
STATIONERY BOOKLET

Mery Pianta, Krähbühlstrasse 135, Zürich, Switzerland

Filed Feb. 1, 1979, Ser. No. 9,270
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805689
Int. Cl.³ B42F 3/02
U.S. Cl. 402—20 5 Claims

1. A stationery booklet comprising:
a first cover;
a second cover;
a ring binding hinging said first and second covers together along one adjacent edge of each said cover;
a plurality of stationery sheets independently attached to and individually separable from said booklet along a perforated line lying parallel to the bound edge of said covers, each said sheet being writable on either side and foldable with other stationery sheets without any sheet being detached from said booklet; and
a plurality of marginally gummed open envelopes attached

to and individually separable from said booklet along a perforated line lying parallel to the bound edge of said covers, each said open envelope being able to receive, to be individually foldable with, and to enclose at least one of



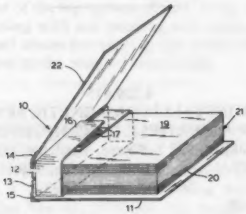
said unseparated stationery sheets within the gummed margins to form an envelope with stationery sheets enclosed, prior to said envelope and stationery sheets being detached from said booklet.

4,239,411

LOCKING DEVICE FOR VISIBLE RECORD BINDERS

Henry Moliard, 942 Avenida Central, Guadalupe (S.V.), Costa Rica

Filed Mar. 9, 1979, Ser. No. 19,088
Int. Cl.³ B42F *13/00*
U.S. Cl. 402—77 **9 Claims**



1. A visible record loose-leaf binder for pages of perforated strip sheet material in partially overlapped relation comprising:

a pair of rigid angle strips having legs in right angle relation;

hinges connecting free end edges of one leg of each strip to permit swinging of the strips from a closed position with the hinged legs in aligned superimposed relation and the other legs extending therefrom to provide a channel to an open position with the hinged legs in back to back relation and the other legs extending outwardly therefrom in opposite directions to provide opposed L-configurations;

first and second sets of prongs spaced along the length of the other legs of the angle strips cooperating to define closed end rings when the angle strips are in the closed channel position and defining upwardly projecting hooks when the strips are in the open L-configuration,

said prongs projecting through the perforations of the strips in both the open and closed positions;

a tape secured to the other leg of one strip having free ends adapted to be wrapped around the other strip in the closed channel position of the strips;

means carried by said free ends of the tape releasably securable to lock the strips in the closed position;

book covers hinged to the angle strips independently swingable with respect to said strips from closed positions overlying the closed channel position of the strips and tape to open positions exposing the sheet material,

whereby said covers may be opened and closed while said strips and tape remain locked in a closed position; and

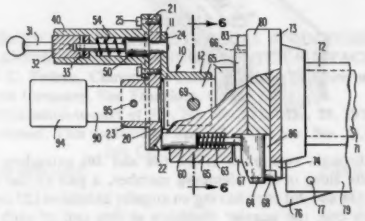
compensating pads of strips between the pages having the strips arranged thereon to cooperate with the pages for forming a stack of uniform thickness along the full lengths of the angle strips.

4,239,412

CONNECTOR MEANS

William F. Hogan, Westville, N.J., assignor to Spectrum X-Ray Corporation, Westville, N.J.

Filed Feb. 16, 1979, Ser. No. 12,958
Int. Cl.³ F16B *1/00*
U.S. Cl. 403—182 **4 Claims**



1. Connector means for quick connection and disconnection of coaxially aligned first and second cylindrical shaft members in preselected angular orientation with respect to each other, said second shaft member having an end flange, said connector means comprising:

a. an adapter connectable to said end flange of said second cylindrical members, said adapter including a portion having a key-hole shaped cross-section;

b. a locking-bracket receiver having a lateral portion of circular C-shaped cross-section for receiving the cylindrical upper portion of said key-hole shaped adapter;

c. said receiver having a vertical portion of flattened C-shape cross-section forming a chamber, said vertical portion including an upward extension having a hole for receiving a lock pin;

d. a locking bracket having a body portion having a cylindrical bore for receiving said first cylindrical member, said bracket having a vertical extension corresponding to the vertical extension of said receiver, said extension having a hole therethrough for receiving a lock pin;

e. a housing having a lock pin therein;

f. means mounting said housing onto said vertical extension of said locking bracket such that said lock pin is aligned with said hole;

g. spring means urging said lock pin toward said hole in said locking-bracket extension;

h. lever-and-cam means for maintaining said lock pin in said holes in said locking bracket and receiver, and for retracting said lock pin, and for maintaining said lock pin retracted.

4,239,413

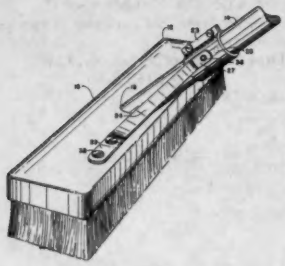
HANDLE BRACE

Joseph Wludyka, 7521 Branch St., Hollywood, Fla. 33024

Filed Jun. 21, 1978, Ser. No. 917,641
Int. Cl.³ B25G *3/00*; F16B *9/02*
U.S. Cl. 403—263 **1 Claim**

1. A handle brace for use with a push broom having a handle rod (**14**) and a broom block (**16**), the block having a bore (**18**) to receive a threaded end of the broom handle rod, said handle brace comprising a cylindrically shaped adjustable clamping

member (22) through which said handle rod is inserted, said cylindrically shaped clamping member having an axially extending slit therein, normally spaced apart lips (23) extending outwardly from said clamping member at said slit, each lip having complementary bolt receiving apertures therein, said clamping member having internally extending protuberances (25) therein to press into said handle rod when the clamping member is tightened, bolts (30) extending through said bolt apertures in said lips, and nuts 31 for tightening said bolts to clamp said clamping member about a handle rod (14) extending



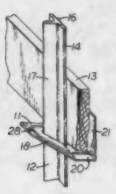
therethrough, two pivot rivets (34 and 36) extending from opposite sides of said clamping member, a pair of flat brace struts (24 and 26) each having an angular extension (27 and 29) at each end, the angular extension at one end of each strut extending at right angles to the other angular extension of said same strut, one angular end of each strut being pivoted on one of said pivot rivets, the second angular end of each strut having screw receiving apertures, and screws (36 and 38) extending through said screw receiving apertures for securing said struts to the broom block to thus firmly secure the broom block to the broom handle rod.

4,239,414

BRACKET FOR ATTACHING RAILS TO STEEL FENCE POSTS

Charles H. Williamson, 823 E. 5th St., Galesburg, Ill. 61401

Filed Nov. 19, 1979, Ser. No. 95,772
Int. Cl.³ F16B 9/00
U.S. Cl. 403—387 4 Claims



1. A bracket for attaching a rail to a steel post having a T-shaped crosssection, the post being the type having a bar, a pair of flanges and a plurality of spaced lugs, said flanges extending in opposite directions from a first edge of said bar, said lugs projecting from said first edge outwardly from a line intermediate said pair of flanges, said bracket comprising:

a formed piece of thin rigid material having first and second parallel bends to define between said bends a generally horizontal bottom rest for said rail and adjacent each of said first and second bends first and second turned-up sides respectively, said first and second sides being turned up at respective predetermined first and second angles to said rest, said rest having a width approximately equal to the width of said rail plus the depth of said lugs,

said first side having an opening for positioning said first side around said post, said opening having a base line within said first bend and a short side opposite said base line, said short side being positioned with respect to said base like an apex of an isosceles triangle, said base line being just long enough to extend across said flanges and said short side being only long enough to extend across a second edge of said bar, an altitude between said base and said short side being somewhat greater than the depth of said bar plus the depth of said lugs, said opening having adjacent each of the ends of said base along respective sides thereof respective portions substantially perpendicular to said base, said perpendicular portions extending along said respective sides of said opening a distance at least equal to the depth of said lugs to provide clearance for said base to be moved over said lugs while said post extends through said openings,

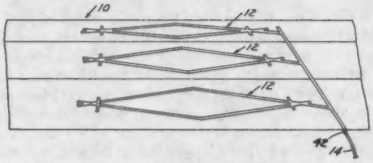
said first angle included between said first side and said rest being an obtuse angle, said second angle being determined such that said second side while said bracket is supporting said post bears against a side of said rail while an opposite side of said rail bears against at least one of said lugs, the sum of said first and second angles being determined such that said short side of said opening while said rail is being supported bears against said second edge of said bar to position said base against said flanges and an upper edge of one of said lugs immediately below said rest, and the height of a portion of said second side opposite said post being determined with respect to said first and second angles such that an upper edge of said second side while said rail is removed can be moved toward said flanges sufficiently to permit said first side to be rotated to the extent required to move said bracket along said post over said lugs.

4,239,415

METHOD OF INSTALLING MAGNETIC SENSOR LOOPS IN A MULTIPLE LANE HIGHWAY

Wendell A. Blikken, 952 S. Grove, Ypsilanti, Mich. 48197

Filed Nov. 6, 1978, Ser. No. 958,112
Int. Cl.³ E01F 11/00
U.S. Cl. 404—75 9 Claims



9. A method of installing magnetic sensor loops in a multiple lane highway comprising the steps of

(a) locating on the surface of a highway lane a test loop having contour which is adjustable in the plane of said surface, said test loop being of the type which detects proximity of an automotive vehicle by a resulting variation in loop inductance,

(c) varying the lateral contour of said test loop while maintaining a steady electrical signal therein until said test loop is responsive to an automotive vehicle substantially within said lane and is unresponsive to a said vehicle in the next-adjacent lane, and then

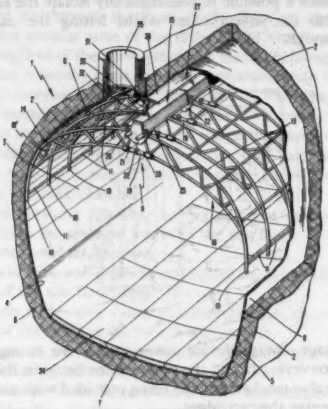
(d) permanently installing a magnetic sensor loop in said lane at the location and adjusted contour of said test loop.

4,239,416

LINED CAVITY IN THE EARTH

Bruno Borca, and Emilio Ruscelli, both of Milan, Italy, assignors to Pirelli Furlanis Applicazioni Indrauliche, Milan, Italy

Filed Sep. 15, 1978, Ser. No. 942,592
Claims priority, application Italy, Sep. 19, 1977, 27658 A/77
Int. Cl.[3] B65G 5/00
U.S. Cl. 405—53 19 Claims



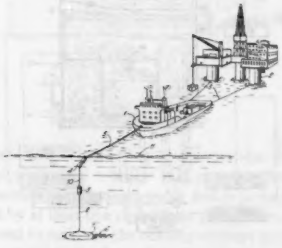
1. A water tight underground cavity structure comprising an underground cavity, a casing of flexible and impermeable material placed in direct contact with the walls of said cavity, a substantially bi-dimensioned resilient reticular member disposed within said casing and having a shape corresponding to at least a portion of the top surface of said cavity, said reticular member contacting with and pressing said casing against said cavity walls, and means for varying the conformation of said reticular member to the walls of said cavity.

4,239,417

MULTI-PURPOSE MARINE STRUCTURE

Arvid Slatten; Harald Bech, and Olav Olsen, all of Oslo, Norway, assignors to A/S Hoyer-Ellefsen, Ing. T. Furuholmen A/S and Ing. F. Selmer A/S, both of Oslo, Norway

Filed Nov. 16, 1978, Ser. No. 961,205
Claims priority, application Norway, Nov. 23, 1977, 774004; Sep. 1, 1978, 783000
Int. Cl.[3] E02B 17/00
U.S. Cl. 405—195 10 Claims



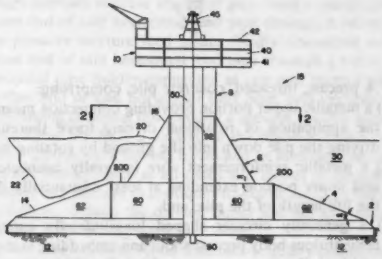
1. A multi-purpose marine structure for installing on a sea bed and intended to be completely submerged below water when in use comprising an outer peripheral body intended to be founded on a sea bed, said peripheral body comprising a tubular ring-formed body of concrete, the base of which is constructed and arranged to rest on a sea bed along its entire base periphery and an inner, centrally arranged, tapered hollow section of concrete, said tapered section being formed as a cone or polyhedron and having a lower end rigidly fixed to the outer peripheral body and tapering upwardly and inwardly therefrom, said inner section and outer peripheral body together forming a monolithic integral concrete unit, the inner tapered section being fixed to the outer peripheral body along the inner periphery of said peripheral body.

4,239,418

ARCTIC MULTI-ANGLE CONICAL STRUCTURE HAVING A DISCONTINUOUS OUTER SURFACE

James C. Pearce, Claremont, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 891,422, Mar. 29, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 34,046
Int. Cl.[3] E02B 17/00
U.S. Cl. 405—211 29 Claims



1. An offshore structure for use in a body of water that contains ice masses, comprising

a lower portion having a first circumferential wall substantially in the shape of a first truncated cone so that the wall of said lower portion is inclined at an angle to the horizontal, said first circumferential wall providing a ramp-like surface means for receiving ice masses moving relative to and in contact with said structure so as to elevate said ice above its natural level to cause said ice to fail in flexure adjacent said structure;

means for affixing said lower portion to the bottom of a body of water; and

an upper portion coaxially positionable above said lower portion, said upper portion having a second circumferential wall substantially in the shape of a second truncated cone so that the wall of said upper portion is inclined at an angle to the horizontal, said second circumferential wall providing a ramp-like surface means for receiving ice masses moving relative to and in contact with said structure so as to elevate said ice above its natural level to cause said ice to fail in flexure adjacent said structure, the angle of inclination from the horizontal of the wall of said upper portion being greater than the angle of inclination from the horizontal of the wall of said lower portion and the cross-sectional diameter of the wall of said upper portion being less than the cross-sectional diameter at the top of the wall of said lower portion so that there exists a step-like section between the wall of said upper portion and the wall of said lower portion.

4,239,419

PRECAST CONCRETE THREADED PILINGS

William F. Gillen, Jr., 6518 Lamb Rd., New Orleans, La. 70126

Continuation-in-part of Ser. No. 738,124, Nov. 2, 1976, abandoned, and a continuation-in-part of Ser. No. 670,978, Mar. 26, 1976, abandoned. This application Oct. 27, 1977, Ser. No. 844,962

Int. Cl.[2] E02D *5/56*

U.S. Cl. 405—232 **32 Claims**

1. A precast, threaded, concrete pile, comprising:

(a) a metallic upper portion providing connection means for the application of rotational driving force thereto for driving the pile down into the ground by rotating it;

(b) a metallic reinforcement core integrally connected to said upper portion extending at least substantially down the full length of the pile; and

(c) a generally circular shaped longitudinally extended, cementitious body precast about and embedding said core, said body having an outer surface provided with only a single continuous set of substantially equally spaced spiral screw threads along at least substantially the entire length thereof; whereby, in being rotatably driven at the head, the reinforcing core of the pile rather than the concrete directly carries the torsional and tensile forces created in the pile during its insertion.

4,239,420

INSTALLATION FOR THE AUTOMATIC AND ACCOUNTED STORAGE AND DISTRIBUTION OF CASH

Jacques Thibonnier, Fontenay-sous-Bois; Pierre-Rene Douard, Versailles, and Jean M. L. Thepot, Paris, all of France, assignors to Compagnie due Roneo and Fluidelec, Paris, France

Filed Dec. 20, 1978, Ser. No. 971,236

Claims priority, application France, Dec. 29, 1977, 77 39702

Int. Cl.[3] B65G *51/40*

U.S. Cl. 406—2 **7 Claims**

1. An installation for the automatic and accounted storage and distribution of cash between an inlet-outlet unit and a unit for storing said cash and forming strong room, which installation comprises:

a plurality of cartridges, substantially cylindrical in shape, which can be loaded with a predetermined quantity of cash, and forming a container for conveying and storing the said cash,

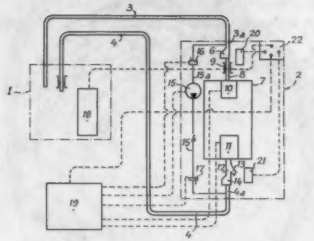
a tubular assembly extending between the inlet-outlet unit and the strong room comprising:

a conveying line for conveying the cartridges from the inlet-outlet unit to the strong room,

a cartridge removal line connecting the strong room to the inlet-outlet unit,

at least one blowing system situated in the strong room whose suction tube is selectively connected to the conveying line and to the atmosphere and whose delivery tube is selectively connected to the atmosphere and to the removal line,

a valve mechanism mounted at the end of each of the aforesaid lines and inside the strong room and which makes it possible to pneumatically isolate the said lines from the strong room whilst letting the cartridges through,



a cartridge storage device connecting in the strong room, the conveying line to the removal line between the aforesaid valve mechanism, and being provided with means for conveying the cartridges,

a logic device of a central unit whose inlet is connected to at least one control desk situated in the inlet-outlet unit and whose outlet is connected to the blowing system and to the conveying means provided in the storage device,

an accounting device comprising a reversible counter, connected to the inlet and to the outlet of the storage device.

4,239,421

VERTICAL SILO FOR FLUID BULK MATERIAL WITH AN INNER BLENDING CHAMBER

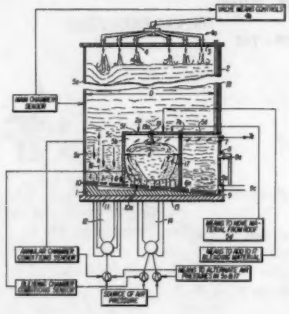
Werner Krauss, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Hamburg, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,440

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657596; Dec. 18, 1976, 2657597

Int. Cl.[3] B65G *69/06*

U.S. Cl. 406—12 **14 Claims**



1. A silo for fluid bulk material, comprising:

a vertical silo wall enclosure having a floor at its bottom and a cap closing its top; said silo wall enclosure having at least one silo outlet orifice at its bottom; at least one valve controlled material inlet opening in the silo cap for supplying material to the silo; a vertical blending chamber of

dimensions substantially smaller than those of the silo, and arranged centrally on the silo floor; said blending chamber having a roof and a side wall spaced radially inwardly from the silo wall enclosure, defining a narrow semi-annular space therewith; a plurality of passages formed through the blending chamber side wall at its bottom for conducting material from the silo into the blending chamber; aeration means to supply pressurized air through the floor of the silo; homogenization means to supply pressurized air through the floor of the blending chamber, an outer annular zone of the floor of the blending chamber being free of the homogenization means, defining a passive zone, whereby pressurized air introduced into the blending chamber spaced radially inwardly from the side wall of the blending chamber is enabled to expand outwardly into the passive zone spaced above the passages formed through the blending chamber side wall, said outer annular zone occupying at least 10% of the entire floor area of the blending chamber;

said blending chamber having aeration means separate from the aeration means of the silo floor;

a source of air pressure;

ducts with valve means connected to the aeration means of the silo floor area;

ducts with valve means connected to the aeration means of the floor of the blending chamber;

means to alternate air pressures in the silo floor and in the blending chamber floor;

means to sense the conditions in the silo chamber and the blending chamber, respectively; and

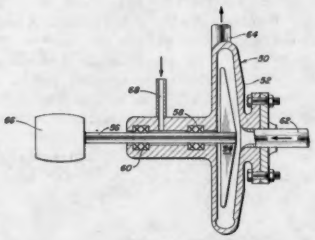
means to control the admittance of pressures to the silo floor and to the blending chamber floor, respectively, in response to the variations in the pressures between the main chamber and the blending chamber.

4,239,422

FLUSHING FLUID FOR CENTRIFUGAL PUMPS USED IN THE PIPELINING OF SLURRIES

James T. Clancey, Pittsburgh, Pa., assignor to Conoco, Inc., Stamford, Conn.

Filed Oct. 4, 1979, Ser. No. 81,749
Int. Cl.³ B65G *53/30*
U.S. Cl. 406—47 **6 Claims**



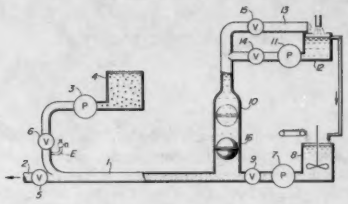
1. In a method for transporting an aqueous slurry of particulate solids in a pipeline wherein said aqueous slurry has an effective viscosity greater than water and is pumped through said pipeline by at least one centrifugal pump wherein a flushing fluid is used to maintain the bearing surfaces in said centrifugal pump substantially free of said particulate solids, the improvement comprising: the use of a thickened aqueous flushing fluid, said thickened aqueous flushing fluid consisting essentially of an aqueous solution and a thickening agent in an amount sufficient to increase the viscosity of said thickened aqueous flushing fluid to at least about 80 percent of the viscosity of said aqueous slurry.

4,239,423

APPARATUS FOR HYDRAULICALLY TRANSPORTING PARTICULATE SOLID MATERIAL

Masakatsu Sakamoto, Matsudo; Kenji Uchida, Kashiwa; Isao Honma, Abiko, and Yukishige Kamino, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 22, 1979, Ser. No. 22,948
Claims priority, application Japan, Mar. 24, 1978, 53-33094
Int. Cl.³ B65G *53/30*
U.S. Cl. 406—47 **5 Claims**



1. An apparatus for hydraulically transporting particulate solid material comprising:

at least one horizontal feed pipe having at least two ends for temporarily storing a mixture of liquid and the particulate solid material to be transported;

a high-pressure mixture transport pipe fluidly connected to one end of said horizontal feed pipe through a valve;

low-pressure mixture feed means fluidly connected to the one end of said horizontal feed pipe through a valve;

a vertical pipe fluidly connected at one end thereof to the other end of said horizontal feed pipe, said vertical pipe mounting therein a float having a specific gravity selected such that the float is located in the liquid-to-liquid interface formed by a driving liquid and an intermediate liquid in the vertical pipe at all times and moves in elevational movement therein as the liquid-to-liquid interface shifts its position, to keep the driving liquid and the intermediate liquid from mixing with each other;

high-pressure driving liquid feed means fluidly connected to the other end of said vertical pipe through a valve;

a driving liquid return pipe fluidly connected at one end thereof to said other end of said vertical pipe through a valve, said driving liquid return pipe being connected at the other end thereof to said high pressure driving liquid feed means; and

means for sealing therein said intermediate liquid having a specific gravity higher than that of said driving liquid and lower than that of said mixture, said intermediate liquid sealing means being located in a lower portion of said vertical pipe and in a portion of said horizontal feed pipe disposed near the connection between the vertical pipe and the horizontal feed pipe.

4,239,424

METHOD AND APPARATUS FOR DISTRIBUTION OF GRANULAR MATERIAL IN A RAILWAY HOPPER CAR

John D. Pavolka, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jul. 25, 1979, Ser. No. 60,248
Int. Cl.³ B65G *53/40*
U.S. Cl. 406—157 **4 Claims**

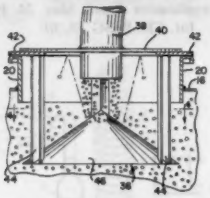
1. A portable distribution device for evenly spreading granular material conveyed in a loading hose providing a moving airstream into a covered hopper car having a hatch opening in a roof and having upstanding coaming associated therewith, the improvement comprising:

a deflector cone located below the roof and in alignment with said hatch opening;

strut means connected with and extending upwardly from the deflector cone;

strut mounting means removably positioned on said coaming, said strut means connected with said strut mounting means to support the deflector cone within said hopper car;

a shield member extending across the hatch opening to prevent material from bouncing from the deflector cone



and having opening means adapted to surround the loading hose, said shield member being connected to said loading hose and being positionable therewith, and

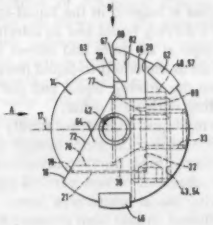
said deflector cone having a diameter smaller than said hatch opening thereby facilitating insertion and removal of said distribution device.

4,239,425

CHUCKING REAMER

Georg Striegl, Winterlingen, Fed. Rep. of Germany, assignor to Firma August Beck, Winterlingen, Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,069
Int. Cl.³ B23B *29/02*
U.S. Cl. 408—181 **8 Claims**



1. A chucking reamer comprising:

(a) a head having a flattened section, commencing on the shaft, the outer face of this section having essentially the shape of a secant;

(b) a crescent-shaped recess, bounded by a curved face and a bottom face, running from the flattened section into the head;

(c) an inner threaded hole provided in the head, running from the central area of the bottom face into which thread the shank of a fixing screw can be screwed;

(d) two narrow, flush bases adjacent to the bottom face and on both sides of it, extending in the longitudinal direction of the shank substantially parallel with the fixing screw;

(e) a support face adjacent to the bottom face and on both sides of it, extending in the longitudinal direction of the shank substantially perpendicular to the fixing screw, intersecting the flush bases and terminating in the front of the head together with one of the flush bases;

(f) a centering hole in the front of the head;

(g) two headless screw holes provided in the head substantially axially parallel with each other, positioned in the head according to a secant, and each opening in one of the flush bases;

(h) headless screws screwed into the headless screw holes, each of which acts on a thrust piece whose area of thrust action is located in the region of the flush base and support face;

(i) a cutter device having a flat lower side in contact with the support face and a back ridge in contact with the thrust pieces;

(j) a crescent-shaped body in the crescent-shaped recess which is traversed by the fixing screw which retains the cutting device by means of the crescent-shaped body;

(k) guide plates on the head; and

comprising the improvements in which

(l) the cutter device and the crescent-shaped body are in one piece and comprise a basic body of steel and a carbide cutter embedded in the basic body;

(m) the fixing screw has a conical head and the crescent-shaped body has a conical recess; and

(n) the geometrical longitudinal axis of the inner thread in the perpendicular direction to the cutting edge of the carbide cutter, and the plane of the bottom face, is eccentric in relation to the geometrical longitudinal axis of the conical recess, to the extent that when the basic body is to be moved to the smallest radius position, the shank of the fixing screw experiences a bending stress.

4,239,426

METHOD OF TRANSPORTING AND STORING MIXED FUEL AND PLANT THEREFOR

Yasuyuki Nakabayashi, Yokohama; Kenichi Nagata, Ichihara, and Shozo Fukuda, Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha; Electric Power Development Co. Ltd. and Misui Engineering & Shipbuilding Co. Ltd., all of Tokyo, Japan

Filed Jul. 27, 1978, Ser. No. 928,433
Int. Cl.³ B65G *53/30*
U.S. Cl. 406—197 **5 Claims**

1. A method of preparing and transporting a coal-oil mixture comprising mainly coal and one of crude or heavy oil comprising the steps of taking coal at a source location and pulverizing the coal to a particle size of approximately 70μ—6 mm, transferring the pulverized coal at the source location into a container, supplying one of crude or heavy oil into the container and mixing the oil with the pulverized coal, adjusting the proportion of coal and oil in the container into the range of 40:60–50:40 for affording smooth conveyance of the coal-oil mixture, free of moisture and additive and with the ratio of coal and oil in the range of 40:60–50:50 from the container through a pipeline to a transfer point facility, collecting the conveyed coal-oil mixture in a vessel at a transfer point facility and adjusting the ratio of coal to oil in the vessel in the range of 65:35–85:15 by settling the pulverized coal and separating the coal from the oil and storing the adjusted coal-oil mixture in the vessel until the mixture is to be transported from the transfer point facility and storing the oil in the separate tank, adding oil to the adjusted coal-oil mixture in the vessel to bring the mixture into the range of 40:60–50:50, and transporting the coal-oil mixture.

4,239,427

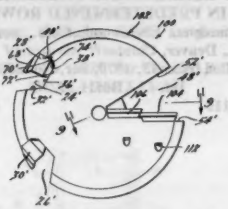
BORING TOOL

Richard E. Walton, II, Fallston, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 28, 1979, Ser. No. 79,858
Int. Cl.³ B23B *51/00*
U.S. Cl. 408—213 **27 Claims**

1. In a boring tool for cutting a generally circular hole including a generally cylindrical shaped body of a predetermined diameter, a driving shaft extending axially outwardly from one side of said body for rotationally driving said body, said boring tool further including at least one spur cutter secured to said body and operative to cut a ring of a predetermined width, and a predetermined number of substantially identical planer blades secured to said body, each of said planer

blades having a predetermined cutting width, said predetermined number being an integer substantially equal to or greater



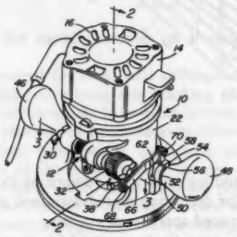
than the radius of said body portion less said predetermined width divided by said predetermined cutting width.

4,239,428

ROUTER ADJUSTMENT ATTACHMENT

James A. Berzina, 2812 W. Kingston Cir., Grand Island, Nebr. 68801

Filed May 24, 1979, Ser. No. 42,604
Int. Cl.³ B23C *1/20*
U.S. Cl. 409—182 **6 Claims**



1. In combination with a router assembly including a router sub-assembly vertically adjustable relative to a supportive base plate through the utilization of a sub-assembly supported rack gear and a pinion gear meshed with the rack gear and journaled from the base, said base including a handle portion for directional control of said router assembly during routing operations, means oscillatably supporting said handle portion from said base, connecting means operatively connecting said handle portion and pinion gear for oscillation of the latter in response to oscillation of the former, said connecting means including first and second lever arms operatively connected to said pinion gear and handle portion, respectively, for angular displacement therewith, and an elongated connecting link having its opposite ends pivotally connected to said lever arms.

4,239,429

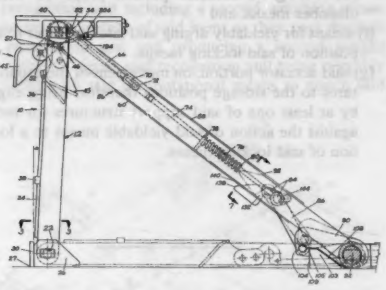
COLLAPSIBLE TRAILER HITCH BUMPER BLOCK EXCESSIVE IMPACT PROTECTION ASSEMBLY

Patricia S. Stoller, Plymouth, Mich.; James C. Hammonds, St. Charles, and Ronald D. Van Dyke, Florissant, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,300
Int. Cl.³ B60P *3/06*; B61D *3/16*; B61K *13/00*; B62D *53/10*
U.S. Cl. 410—59 **5 Claims**

1. In a tractor operated railway trailer hitch including a vertical strut and a diagonal strut supporting a fifth wheel, the improvement comprising:

a bumper block assembly including at least one bumper block support plate pivotably mounted about a first pin in said fifth wheel; a bumper block laterally spaced from said bumper block support plate and pivotably mounted about a second pin extending through said bumper block support plate and said bumper block; said bumper block including a generally vertical surface adapted adapted to be contacted by a tractor and a body portion including a first opening to receive said second pin; a third pin extending through said bumper block and said bumper block support plate; said third pin designed to shear at a predetermined applied load; whereby if the tractor applies a load to said bumper block and to said third pin above said predetermined load, said third pin will shear off and said bumper block will pivot about said second pin, and whereby the remainder of the hitch operating mechanism, which might normally be damaged by such an impact to said bumper block, is protected from such hard impact by said third pin.

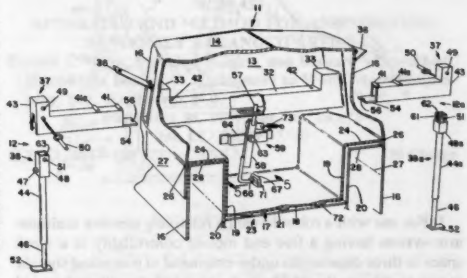


4,239,430

JACK AND TIE-DOWN SYSTEM FOR A VEHICLE MOUNTED CARGO UNIT

Richard L. Groene, 1800 Fuller Rd., West Des Moines, Iowa 50265

Filed Jul. 18, 1979, Ser. No. 58,482
Int. Cl.³ B60P *3/32*
U.S. Cl. 410—68 **5 Claims**



1. In a jack and tie-down system for a vehicle mounted cargo unit having a front wall and a bottom wall, and wherein the vehicle has opposite side walls, said system comprising:

(a) a pair of linearly extendible and retractible front jack assemblies for supporting said cargo unit, each of which includes a support structure and a detachable jack unit;

(b) a transversely extended open ended storage chamber means for said jack assemblies secured to the front wall of said unit,

(c) means movably mounted each support structure within said chamber means for movement longitudinally thereof to an operating position projected outwardly from one end of said chamber means, and to a storage position within said chamber means,

(d) coacting means at one end of each jack unit and at the outer end of an associated support structure for detachably connecting a jack unit in a suspended position when a support structure is in the operating position therefor,

each jack unit, when retracted and detached from an associated support sturcture being receivable within said support structure for movement therewith to said storage position,

(e) means on said cargo unit for releasably locking said cargo unit for transport with said vehicle including a latch member having an actuator portion projected within said chamber means, and

(f) means for yieldably urging said latch member to a release position of said locking means,

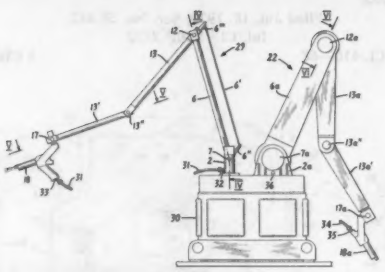
(g) said actuator portion, on movement of the support structures to the storage positions therefor, being engageable by at least one of said support structures for movement against the action of said yieldable means to a lock position of said locking means.

4,239,431

LIGHT-WEIGHT PROGRAM CONTROLLER

Giorgio Davini, Milan, Italy, assignor to Basfer S.r.L., Milan, Italy

Continuation-in-part of Ser. No. 598,688, Jul. 24, 1975, abandoned. This application Jul. 13, 1977, Ser. No. 815,440
Claims priority, application Italy, Oct. 22, 1974, 28662 A/74
Int. Cl.[3] B05B *13/00*; B25J *9/00*; G05B *19/42*
U.S. Cl. 414—1 **3 Claims**



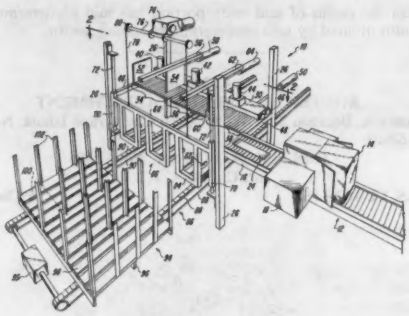
1. For use with a robot having a relatively massive multiple-arm system having a free end moved controllably in a work space in three dimensions under command of command signals, means to mount on said free end a tool to be positioned in said work space and progressively moved in said space, a manually operable teaching system mountable in said work space in which the robot is to move said free end and tool thereon and having a lightweight multiple-arm system constructed symmetrical to the multiple-arm system of said robot with a second free end for mounting thereon a second tool similar to the first-mentioned tool movable manually in said work space progressively in three dimensions in a work pattern in said work space corresponding to desired movement of the first-mentioned tool in said work space, means to develop signals representative of the spatial work pattern of movement of said second free end of the teaching system and a tool thereon, means to memorize said signals, and means to apply command signals to said multiple-arm system of the robot developed from said memorized signals and to cause the multiple-arm system of the robot and first-mentioned free end to duplicate the movements of the free end of the teaching system effected within said work space.

4,239,432

ARTICLE HANDLING APPARATUS CAPABLE OF REVERSIBLY LOADING AND UNLOADING ARTICLES IN PREDETERMINED ROWS

Raymond Richardson, Englewood, Colo., assignor to Nolan Systems Inc., Denver, Colo.

Filed Mar. 13, 1979, Ser. No. 20,185
Int. Cl.[3] B65H *31/30*
U.S. Cl. 414—110 **22 Claims**



1. Article handling apparatus, comprising in combination:

first means for delivering a predetermined plurality of articles in a spaced apart serial manner;

second means operatively arranged for receiving the predetermined plurality of articles delivered from said first means, said second means including means for separating each of said articles into a predetermined spaced apart linear configuration with adjacent articles in the linear configuration being spaced at predetermined intervals, said second means defining an intermediate conveying path upon which the articles are received and separated;

third means for simultaneously transferring the predetermined plurality of articles from the intermediate conveying path while maintaining the predetermined linear configuration, said third means further vertically moving the predetermined linear configuration of articles with respect to the intermediate conveying path;

a container including means defining a generally planar article supporting surface and means for partitioning said container into at least one linear row of spaced apart compartments, each row being formed of a plurality of linearly aligned compartments, the number of compartments in each row being at least equal to the predetermined plurality of articles in the predetermined linear configuration, the partitioning means further spacing adjacent compartments in each row at approximately the same intervals at which adjacent articles are spaced in the predetermined linear configuration;

fourth means for operatively positioning said container with the compartments of one row in parallel alignment with predetermined linear configuration of articles during at least a portion of the movement of the articles by said third means; and

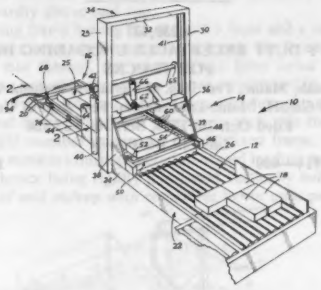
said third means further transferring all of the articles in the predetermined linear configuration into the row of compartments of the container with one article being received in each compartment of the row.

4,239,433

PALLETIZER WITH ROLLER-ASSISTED OFF-FEED DEVICE

Edward W. Hanson, Anaheim, Calif., assignor to Columbia Machine, Inc., Vancouver, Wash.

Filed Aug. 8, 1978, Ser. No. 931,435
Int. Cl.³ B65G *57/03*
U.S. Cl. 414—84 **2 Claims**



1. Apparatus for stacking articles on a stacking platform comprising

a carriage mounted for horizontal shifting between an extended position overlying said stacking platform and a retracted position spaced from said platform, said carriage including a plurality of article-support rollers mounted for rotation about substantially horizontal axes extending transversely of the path traveled by said carriage as it moves from its extended to its retracted position,

first and second elongate members disposed along the path of travel of said carriage above said stacking platform, and mounted for relative shifting toward and away from one another, to effect shifting of the second member between first and second positions, respectively,

biasing means yieldably biasing said first and second members toward one another,

an inflatable/deflatable hose operatively interposed between said first and second members to shift said members apart upon inflation of said hose, and

an elongate element mounted on said second member and extending horizontally along the path of travel of said carriage, said element having a frictional surface positioned to engage said rollers when said second member is shifted to its second position, causing the rollers to rotate to off-load articles from the carriage as the carriage is moved from its extended to its retracted position.

4,239,434

WEIGHT CODED DELIVERY CONVEYOR SYSTEM

Donald N. Gannon, Dallas, Tex., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 9, 1979, Ser. No. 28,570
Int. Cl.³ B65G *47/50*; G05B *19/18*; G01G *23/38*; G06F *15/04*
U.S. Cl. 414—136 **8 Claims**

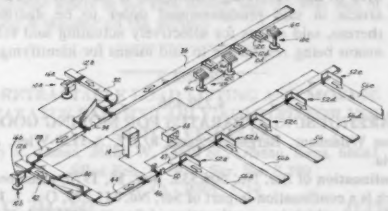
1. An apparatus for sorting items comprising:

a conveyor for carrying the items to be sorted;

a plurality of receiving stations located along said conveyor for receiving said items to be sorted, each of said receiving stations including first weighing means for sensing the weight of each item and for producing a signal representative of the weight, each receiving station further including manual input means operable to produce a signal representative of a predetermined destination of each of said items;

computational means operably associated with said receiving stations, said computational means including memory means for storing said weight representative signal for each item along with the associated destination representative signal for that item and data retrieval means for selectively retrieving said weight and destination representative signals;

a recognition unit located in the path of said conveyor downstream of said receiving stations for identifying each item according to the stored weight representative signal, said recognition unit including a second weighing means for sensing the weight of said items as they pass through said recognition unit and producing a second weight representative signal, said recognition unit being operably associated with said computational means to match said



second weight representative signal with the stored weight representative signals to identify said item in said recognition unit and said data retrieval means being operable upon such identification to retrieve the stored predetermined destination representative signal associated with said weight identified item;

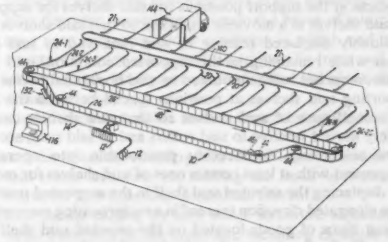
transfer means operably associated with said computational means and said conveyor, said transfer means including item removal means for removing said identified item from said conveyor at said predetermined destination downstream from said recognition unit in response to said retrieved destination representative signal.

4,239,435

APPARATUS AND METHOD FOR ASSEMBLYING RANDOMLY ARRANGED ARTICLES

Donald J. Weiss, Berkeley Heights, and Bernard S. Speckhart, Short Hills, both of N.J., assignors to White Machine Company, Inc., Kenilworth, N.J.

Filed May 16, 1979, Ser. No. 39,672
Int. Cl.³ B65G *47/50*
U.S. Cl. 414—136 **39 Claims**



1. Apparatus for selectively distributing a plurality of unordered articles in predetermined orders comprising:

a plurality of receiving stations, each of said plurality of stations for receiving a plurality of selectively distributed ones of said plurality of articles in a predetermined order;

conveyor means for releasably supporting said plurality of unordered articles to be selectively distributed and for displacing releasably supported ones of said plurality of unordered articles in a path adjacent to said plurality of receiving stations, and said conveyor means having at least one portion for receiving said plurality of unordered

articles sequentially and releasably supporting said plurality of unordered articles in the sequence received;

release means at each of said plurality of receiving stations for selectively releasing an article from said conveyor means for distribution to said receiving station;

means at each of said plurality of receiving stations for identifying each article displaced thereby by said conveyor means as a function of said article's position in said sequence of unordered articles; and

means for selectively activating said release means at each of said plurality of receiving stations when an article being displaced thereby by said conveyor means is to be distributed to that receiving station and is the next succeeding article in said predetermined order to be distributed thereto, said means for selectively actuating said release means being responsive to said means for identifying.

4,239,436

WAREHOUSING APPARATUS FOR MOVING GOODS

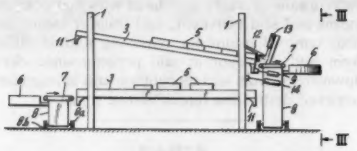
Anton Wildenaur, Bergheidengasse 8/3/2, A-1130-Wien, Austria

Continuation of Ser. No. 604,533, Aug. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 511,279, Oct. 2, 1974, abandoned, which is a continuation of Ser. No. 224,662, Feb. 9, 1972, abandoned. This application Apr. 10, 1978, Ser. No. 895,052

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1971, 2106053; Mar. 2, 1971, 2109832

Int. Cl.³ B65G *65/00, 1/06*

U.S. Cl. 414—276 **4 Claims**



1. Warehousing apparatus comprising a support rack, said rack comprising spaced vertical posts and horizontal beams supported on and extending between said posts, elongated shelves each having a first end and a second end spaced from the first end in the elongated direction of said shelves, said shelves supported on said horizontal beams at horizontally spaced positions, said shelves arranged for supporting and storing individual and separate items of goods, wherein the improvement comprises first means supported on said horizontal beams at the support positions for said shelves for supporting said shelves in a movable condition so that said shelves can be slidably displaced relative to said rack and to said first means while remaining in the supported condition, said first means comprises rollers mounted on said horizontal beams and supporting said shelves at positions spaced between the first and second ends of said shelves so that said shelves can be slidably moved relative to said rollers and to said rack, second means selectively displaceably positionable into operative engagement with at least certain ones of said shelves for moveably displacing the selected said shelf in the supported position in the elongated direction thereof in a reciprocating manner for moving items of goods located on the selected said shelf between the first and second ends thereof, said second means including a movable carriage for supplying items of goods to and removing items of goods from the first and second ends of said shelves, a vibrator, said moveable carriage supporting said vibrator for positioning said vibrator at one end of one of said shelves, said vibrator having a contact member displaceable into contact with the shelf for transmitting the vibratory movement to the shelf and displacing the items of goods thereon between the first and second ends thereof, a stabilizer member attached to said moveable carriage and moveable into engagement with said rack for securing said rack and moveable carriage together to limit the movement of said rack and carriage due to the vibratory action of said vibrator, said contact member of said vibrator comprising a piston assembly including a piston rod displaceable by fluid pressure into contact with the shelf to be vibrated, a shelf coupling attached to the end of said piston rod and arranged to engage said shelf to be vibrated, and said shelf having a downwardly extending projection at at least one of its first and second ends, and said shelf coupling comprising a fork-like member arranged to intermesh with said projection for transmitting the vibrating action to said shelf.

4,239,437

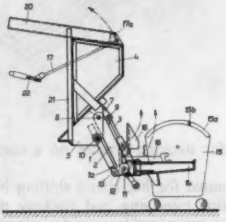
HEAVY DUTY RECEPTACLE UNLOADING DEVICE FOR TRUCKS

Jakob Naab, Mainz, Fed. Rep. of Germany, assignor to Zoller-Kipper GmbH, Mainz-Laubenheim, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 927,526

Int. Cl.³ B65F *3/04*

U.S. Cl. 414—408 **18 Claims**



1. A lifting-tilting apparatus for emptying large and heavy receptacles into collecting containers, particularly garbage receptacles into garbage collecting vehicles, comprising in combination:

(a) a lifting device **13**, **14** for gripping said receptacles,

(b) pivoting arms **2** having means for mounting said lifting device **13**, **14** for raising and swinging-in movement along a predetermined lifting path and a swinging-in path respectively,

(c) said pivoting arms **2** having lugs **12** by which they are actuated,

(d) a pour-in device **4**,

(e) elongate cylinder-piston assemblies **1** engageable with the lugs **12** of the pivoting arms **2** to drive the same,

(f) said assemblies **1** extending roughly parallel to said pivoting arms **2**,

(g) mounting plates **5** secured to the pour-in device **4**,

(h) means **8** pivotally attaching said pivoting arms to said mounting plates for movement about a horizontal axis **8**,

(i) said lugs **12** extending below the plane of said horizontal pivotal axis **8**,

(j) means **10** supporting the cylinder-piston assemblies on said mounting plates, and

(k) mechanism **3** carried by said mounting plates **5**, positively driving said lifting device **13**, **14** both in said lifting path and in said swinging-in path in response to the tilting motion of the pivoting arms **2**, as directly effected by said piston-cylinder assemblies **1**.

4,239,438

DEVICE FOR LIFTING AND CARRYING LOADS ON TOP OF PICKUP TRUCKS

Clifford R. Everson, 1408 - 16th Ave., Camanche, Iowa 52730

Filed Dec. 4, 1978, Ser. No. 966,379

Int. Cl.³ B60P *9/00*

U.S. Cl. 414—462 **4 Claims**

1. A loading and carrying device to be attached to a pickup truck comprising:

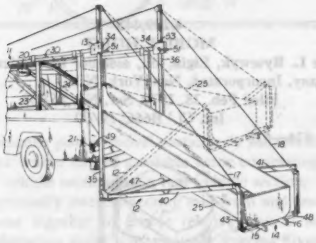
a fixed frame having a plurality of spaced standards to be attached to each side of a bed of the pickup truck, a fixed

member attached to said standards along each side of said bed, said fixed members having respective rear portions terminating about even with the rear end of said bed and front portions extending from said bed forwardly substantially horizontally above the cab of said pickup truck,

a rail fastened along the inside of each side of said fixed frame, each of said rails having a slanting portion extending upwardly and forwardly from the rear end of a floor of said bed, a gradually curved portion above a front portion of said bed and a horizontal portion extending forwardly above said cab,

a carrying frame having for support a front and a rear cross member connected respectively across the front and the rear end thereof, the ends of said front cross member having movable supporting means constrained in adjacent ones of said rails and readily movable therealong,

a pivotal supporting frame having on each side thereof an upright member connected to said fixed frame, said upright members during operation of said loading and carrying device being rigidly positioned vertically behind said bed of said pickup with respective lower ends positioned



behind and below said bed of said puckup, a guiding member for each side of said pivotal supporting frame, each of said guiding members having a pivotal end pivotally connected to said lower end of said respective upright member, said guiding members being free to rotate about said respective pivotal ends in planes of the respective sides of said frames and having respective load-carrying ends opposite said pivotal ends,

pivotal connecting means pivotally connecting each end of said rear cross member of said carrying frame to the adjacent one of said load-carrying ends of said guiding members, and

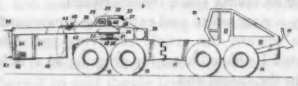
hoisting means connected between said fixed frame and said guiding members, said hoisting means operable to rotate said guiding members about said pivotal ends for moving said rear cross member between a lower position near the ground and an upper position adjacent said rear ends of said fixed members while simultaneous moving said front cross member along said rails, thereby moving said carrying frame between a slanting position at the rear of said pickup truck and a substantially horizontal position over said cab and said bed.

4,239,439

LOG SKIDDER

Leon Blagg, Bertram, Tex., assignor to Rolligon Corporation, Stafford, Tex.

Filed Sep. 15, 1978, Ser. No. 942,473
Int. Cl.³ B60P *1/04*
U.S. Cl. 414—494 **13 Claims**



1. A log skidder apparatus for use with a vehicle having a fifth wheel located over the rear wheels thereof comprising:

log carrier means pivotally attached to said fifth wheel and including are elongated trough extending beyond the rear of said vehicle and adapted to be lowered to a position where a surface thereof rests on the ground;

first means for pulling a log toward said vehicle and disposing portions of said log and said trough in overlapping relationship; and

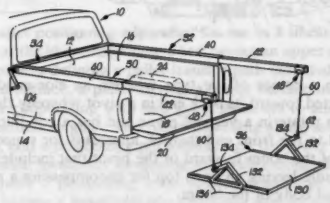
second means for causing said elongated trough to abut the bottom surface of the log thus securing said overlapping portions together as a substantially rigid assembly with said surface off of the ground, whereby during skidding the weight of the log that is supported by the vehicle is carried solely at the fifth wheel, and the rear end of said log is skidded on the ground.

4,239,440

RETRACTABLE LOAD LIFTING AND MOVING APPARATUS PARTICULARLY ADAPTED FOR USE ON MOTOR VEHICLES

Larry R. James, 26260 W. 135th St., Olathe, Kans. 66061

Filed Feb. 1, 1979, Ser. No. 8,390
Int. Cl.³ B60P *1/54*
U.S. Cl. 414—542 **11 Claims**



1. In load lifting and moving apparatus, which is particularly adapted for use on a vehicle having a load receiving space that is at least partially enclosed by bottom structure located above ground level and by body structure located above said bottom structure and that is provided with a zone of vertical and lateral clearance adjacent one extremity of said bottom structure for horizontal passage of a load into or out of said space:

horizontally extensible boom means including base structure rigidly mountable on said body structure and elongate boom structure reciprocably carried by said base structure and longitudinally shiftable relative to the latter between a retracted condition in which said boom structure is distally disposed inwardly relative to the plane of said clearance zone and an extended condition in which said boom structure extends substantially horizontally from said base structure and distally outwardly beyond the plane of said clearance zone;

first selectively actuatable means carried by said base structure;

means for operably coupling said first actuatable means with said boom structure for shifting the latter between said retracted and extended conditions thereof;

winch means carried by said boom structure adjacent the distal extremity of the latter and including elongate flexible means and rotatable means to which said flexible means is secured and upon which said flexible means may be wound to permit taking up and paying out of said flexible means when said rotatable means is rotated in a corresponding direction;

means for operably coupling said flexible means into supporting relationship with a load to be lifted and moved;

second selectively actuatable means carried by said base structure; and

means for operably coupling said second actuatable means with said winch means for rotating said rotatable means in

either direction for taking up and paying out said flexible means to lift and lower said load respectively,

said base structure being open at the extremity thereof nearest the plane of said clearance zone and provided with a cavity therein communicating with said open extremity for receiving at least a portion of the length of said boom structure therewithin,

said boom structure being in telescoped relationship with said base structure and at least partially received within said cavity of the latter.

4,239,441

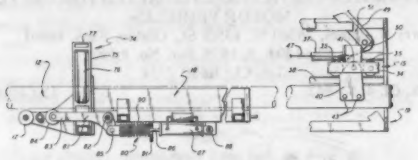
SUPPORT FOR TOOL HANDLING BOOM

James J. Maynard, Marcellus, N.Y., assignor to Syracuse Supply Company, Syracuse, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,369

Int. Cl.³ F27D *3/15*

U.S. Cl. 414—587 **14 Claims**



1. In a device of the type wherein an elongated boom is supported toward its back end in a pivot whereby the boom is able to rotate in a vertical plane and has a conditioning tool affixed to the front end thereof, apparatus for supporting the body of the boom forward of the pivot that includes

a cradle having an open top for encompassing a portion of said body of the boom,

a rest mounted in the cradle beneath the boom upon which the boom is able to be seated,

a lever arm mounted in the cradle beneath the boom that is arranged to rotate in the same plane as said boom,

a follower mounted in one end of the lever arm that is arranged to ride in contact against the bottom of the boom,

a spring means acting against the opposite end of the lever arm for biasing the follower against the boom,

a shock absorber also arranged to act against the opposite end of the lever arm for dampening downwardly acting loads that are suddenly applied to the follower.

4,239,442

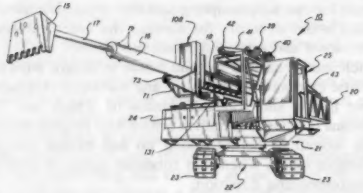
APPARATUS FOR MANEUVERING A CONDITIONING TOOL WITHIN A FURNACE

James J. Maynard, Marcellus, N.Y., assignor to Syracuse Supply Company, Syracuse, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,370

Int. Cl.³ F27D *3/15*

U.S. Cl. 414—587 **16 Claims**



1. Apparatus for adjusting the vertical positioning of a tool support including

a base frame,

a generally horizontally-aligned gantry positioned over the base frame having a tool support boom movably mounted therein which extends outwardly from the front of the gantry,

horizontally-aligned front and rear pivot means affixed to the gantry in a spaced-apart parallel relationship,

a first adjusting means being arranged to act between the base frame and the front pivot means for raising and lowering the gantry in regard to the base frame,

a second adjusting means being arranged to act between the base frame and the rear pivot means for raising and lowering the gantry in regard to the base frame, and

a link being rotatably supported at one end in one of said pivot means and being rotatably supported at the other end within said base frame.

4,239,443

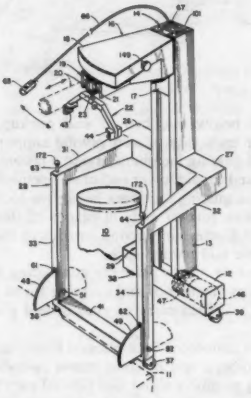
MOBILE HOIST

Ambrose L. Rysewyk, Elgin, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 16,058

Int. Cl.³ B66C *19/00*

U.S. Cl. 414—618 **18 Claims**



1. A hoist, which comprises:

an elongated housing;

a standard extending upwardly from said housing;

a plurality of interconnected elevating slides mounted on the standard for successive extension relative to each other;

a boom extending from one of said slides;

a pair of crossarms extending from opposite sides of said standard in directions which are substantially parallel to the housing and orthogonal with respect to said boom;

a pair of inverted parallel L-shaped arms each having a horizontally extending section connected to one end of one of said crossarms and a downwardly extending section, said L-shaped arms being spaced apart to define an article receiving space therebetween;

a clamp connected to and extending downwardly from the boom toward the article receiving space between the inverted L-shaped arms for gripping an article positioned within the space; and

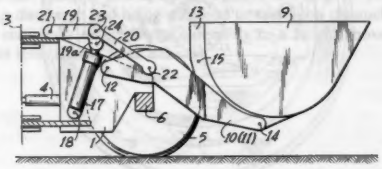
a means mounted within said housing for successively actuating the slides to lift an article gripped by said clamp.

4,239,444

POWER SHOVEL

Michael Schmelzer, Trier, Fed. Rep. of Germany, assignor to Gutehoffnungshütte Sterkrade Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 891,029
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 2714276
Int. Cl.[3] B66F 9/00
U.S. Cl. 414—685 6 Claims



1. A vehicular power shovel particularly suitable for underground use within limited available space comprising:

a front vehicle section and a rear vehicle section;

means pivotally interconnecting said front and rear vehicle sections together to enable relative pivotal movement therebetween about a substantially vertical pivot axis;

said front vehicle section being located forwardly of said rear vehicle section taken relative to the normal direction of travel of said power shovel;

front frame means contained in said front vehicle section;

drive means including a front axle located in said front vehicle section;

a loading shovel member located forwardly of said front axle;

lift arm means having said loading shovel supported at one end thereof and having an opposite end pivotally mounted on said front frame means at a point rearwardly of said front axle;

toggle lever means including an intermediate buckling joint pivotally mounted between said front frame means and said lift arm means to transmit power to said lift arm means, said toggle lever means being connected to said front frame means at a point rearwardly of said pivotal mounting of said opposite end of said lift arm means to said front frame means; and

power cylinder means pivotally mounted between said front frame means and said toggle lever means for actuating said shovel member through said toggle lever means and said lift arm means;

said power cylinder means being pivotally connected with said toggle lever means at a point other than said buckling joint located rearwardly of said pivotal mounting of said opposite end of said lift arm means to said front frame means;

with each of said mounting of said toggle lever means to said front frame means, said buckling joint of said toggle lever means, and said connection of said power cylinder means to said toggle lever means being all located rearwardly of said front axle;

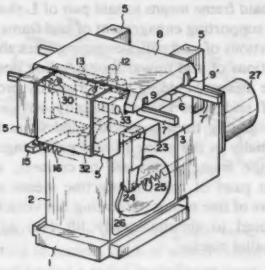
said power cylinder means, including said pivotal connection thereof to said toggle lever means and to said front frame means, being located rearwardly of said pivoted mounting of said lift arm means on said front frame means.

4,239,445

POSITIONING APPARATUS FOR TRANSFERRING PALLETS

Fumihiro Ozawa, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

Filed Oct. 19, 1977, Ser. No. 843,681
Claims priority, application Japan, Oct. 19, 1976, 51-125230
Int. Cl.[3] B65G 47/74
U.S. Cl. 414—749 2 Claims



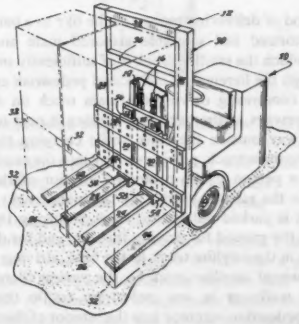
1. A pallet positioning apparatus, for use in a linear station machine or the like, comprising: a bed having an upper surface; guide members defining a pallet transfer path mounted on the upper bed surface; a pallet having a lower surface including means for cooperating with said guide members to allow said guide members to guide said pallet travelling along said guide members, and a positioning pin mounted on the lower surface of said pallet; means for advancing said pallet along the pallet transfer path; a positioning lever rotatably mounted on said bed and having a longitudinally extending axis located intermediate said guide members, a roller mounted at the end of said positioning lever, and a member having a base surface mounted on said positioning lever adjacent said roller and defining a space therebetween dimensioned to receive said pallet positioning pin; biasing means for biasing said positioning lever to rotate for engaging said positioning pin on the lower surface of said pallet between said roller and said base surface opposite said roller for stopping said pallet on said guide members; and means for rotating said positioning lever to disengage said positioning pin to release said pallet.

4,239,446

ADAPTER FOR A FORK LIFT TRUCK

Theodore Vucinic, 5402 Ninth Ave., Countryside, Ill. 60525

Filed Jul. 10, 1978, Ser. No. 923,301
Int. Cl.[3] B66C 3/00
U.S. Cl. 414—785 5 Claims



1. An attachment, for standard fork lift vehicles that include

a pair of L-shaped lift members that provide forwardly extending pallet-engaging tines, each pallet-engaging tine having a distal toe portion and a root portion, and upwardly extending posts, for converting the vehicle from one that can only lift a single width pallet stack, said attachment comprising, in combination:

laterally elongated frame means of a lateral width to supportingly cooperate with a pair of adjacent single width pallets;

attachment means on said frame means for selective connection of said frame means to said pair of L-shaped lift members by supporting engagement of said frame means on the root portions of said pallet-engaging tines and by embracing portions of said upwardly extending posts; and

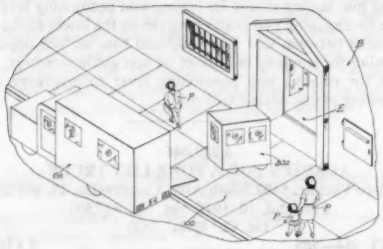
said frame means including two forwardly projecting tines, each of said tines spaced laterally outward from said pallet-engaging tines and positioned so as to be located substantially in the plane of said pallet-engaging tines to which the frame means are to connect, whereby two adjacent pairs of pallet-lifting tine means are provided, said pairs of tine means permitting the vehicle to be selectively used to simultaneously lift two adjacent single width pallet stacks.

4,239,447

ARMORED MONEY-DELIVERING VEHICLE

Bert Bach, 270 West End Ave., New York, N.Y. 10023

Continuation of Ser. No. 796,733, May 13, 1977, abandoned.
This application May 8, 1978, Ser. No. 903,520
Int. Cl.[3] F41H *7/00*
U.S. Cl. 414—786 **1 Claim**



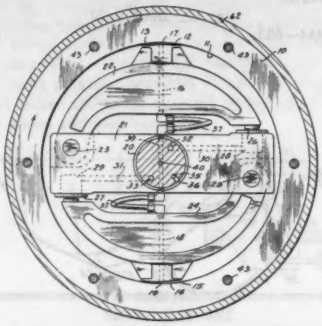
1. Method of delivering money or the like to a bank in separately motorized and steerable armored main and satellite trucks of which the satellite truck is of sufficiently small size to pass through the hereinafter mentioned pedestrian entrance to the bank, comprising driving the main truck on designated public driveways to the bank and parking it next to a pedestrian walkway outside the bank while carrying the satellite truck on the main truck; placing money into the satellite truck; stationing a person in the protected interior of the satellite truck while the same is carried by the main truck; while the main truck is parked outside the bank, lowering the satellite truck onto the ground for driving thereon; and for delivery of the money in the satellite truck to the bank, driving and steering the lowered satellite truck by the person therein on the pedestrian walkway in any pedestrian traffic thereon and through a pedestrian entrance into the interior of the bank or to a depository located along the pedestrian walkway outside the bank.

4,239,448

HIGH PRESSURE PUMP FOR FLUID JET SLITTER

Edwin X. Graf, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 25, 1977, Ser. No. 844,911
Int. Cl.[3] F04D *1/12*
U.S. Cl. 415—89 **3 Claims**



1. A high-pressure liquid pump comprising in combination:

a pump shell having an annular smooth inwardly facing surface for carrying a film of liquid;

a hydraulic shoe having an outer convexly curved working face for coacting close running engagement with said shell surface;

a shoe support for positioning the shoe with its working face adjacent said annular surface;

a passage through the shoe with an entry opening in the shoe working face for conducting away high-pressure liquid from the hydraulic wedge built up between the shoe and shell surface;

and power means for driving said shell in rotation continuously moving the inwardly facing surface of the shell past the shoe and continuously forming the hydraulic wedge forcing liquid through the shoe passage at high pressure;

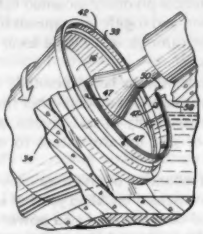
said shoe support including a pivotal arm supported on an axis for movement of the shoe toward and away from the pump shell surface with pressure control means connected to the pivotal arm for forcing the arm to pivot in direction to urge the shoe toward said shell surface.

4,239,449

SCREW PUMP CONSTRUCTION

William J. Bauer, 422 S. Park Rd., LaGrange, Ill. 60525

Filed Nov. 24, 1978, Ser. No. 963,388
Int. Cl.[3] F04D *3/00*
U.S. Cl. 415—73 **2 Claims**



1. A pumping system comprising an inclined screw pump having a casing with a lower intake end disposed in a lower liquid level and an upper discharge end discharging into an open channel disposed above said lower liquid level; compart-

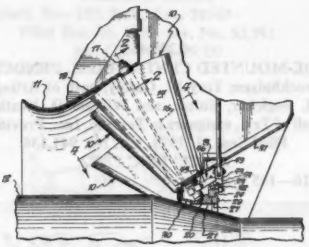
ment-forming blade means disposed within said casing joined to the inner periphery thereof; means mounting said blade-means and casing for rotatable movement whereby liquid enters said pump intake end and is conveyed along the length of said blade means to said pump discharge end; said pump discharge end being flared to a maximum diameter at the terminal end thereof; an annular projecting lip extending from said terminal end concentric with the pump longitudinal axis; stationary sealing strips mounted adjacent the rotatable end of said pump casing slidably engaging said pump projecting lip in fluid-sealing engagement; said sealing strips effecting a fluid seal between said rotating pump discharge end and said channel whereby said pump liquid discharge is forced to flow away from said pump in said open channel; the lowest point on said pump discharge end being disposed in said open channel and said stationary sealing strips extending to a height above the liquid level in said open channel.

4,239,450

ADJUSTING MECHANISM FOR VARIABLE INLET VANE

Lawrence J. Geitner, Angola, and Christian C. Herbeck, Kenmore, both of N.Y., assignors to Buffalo Forge Company, Buffalo, N.Y.

Filed May 17, 1979, Ser. No. 39,588
Int. Cl.³ F04D *29/46*
U.S. Cl. 415—160 **4 Claims**



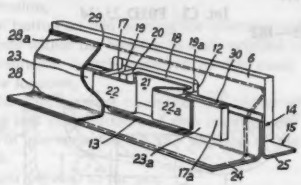
1. A variable inlet vane adjusting construction comprising a hub, a vane having an axis mounted transversely to the axis of said hub, first pivot means mounting said vane for pivotal movement on said hub, an adjusting ring, means mounting said adjusting ring for circumferential sliding movement on said hub about said axis of said hub, a plurality of circumferentially spaced axial slots on said adjusting ring, first opposed sides on said slots, a bearing of substantially solid rectangular configuration in each of said axial slots, each of said bearings having opposite second sides in face-to-face slidable engagement with said first sides, a plurality of pin members each having first and second end portions, second pivot means pivotally mounting said first end portion of each pin member on one of said bearings for movement relative to said bearing in three planes, a plurality of levers having first and second ends, means for fixedly attaching said first end of each of said levers to a vane, and means for fixedly attaching said second ends of each said levers to a second end of each of said pins, whereby rotation of said adjusting ring causes pivotal movement of said vanes while said first and second sides remain in full face-to-face engagement.

4,239,451

DEVICE TO FASTEN A SEAL TO THE GUIDE VANES OF A TURBINE ENGINE

Michel A. Bouru, Moissy Cramayel, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed May 30, 1979, Ser. No. 43,612
Claims priority, application France, Jun. 1, 1978, 78 18973
Int. Cl.³ F01D *11/08*
U.S. Cl. 415—170 R **6 Claims**



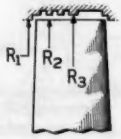
1. In a device to fasten a seal on guide vanes of a turbine engine consisting of sectors, each of which comprises a plurality of blades and having a radial inner flange upon which a ring carrying a seal is secured, the improvement wherein the ring carrying the seal has a radial wing resting against said inner flange and is provided with cutouts arranged so as to coincide with corresponding cutouts provided on the flange, wherein U shaped clips are engaged securing, along the opposing edges of the cutouts, the radial wing of the seal ring against the inner flange, said clips being retained in place by a locking device between said clips and resting with its opposite faces against the backs of the clips, retention of the clips in place being ensured by a Ω shaped resilient fastener, engaging and secured in a recess of the locking device and resting with its wings against the lateral faces of the clips.

4,239,452

BLADE TIP SHROUD FOR A COMPRESSION STAGE OF A GAS TURBINE ENGINE

Frank Roberts, Jr., Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 26, 1978, Ser. No. 919,186
Int. Cl.² F01D *11/08*
U.S. Cl. 415—172 A **16 Claims**



1. A compression stage for an axial flow rotary machine, which comprises:

a case forming a portion of the outer wall of the flow path for working medium gases of the fan stage;

a shroud housed in said fan case and having

a first inwardly facing surface,

a second inwardly facing surface recessed from said first surface wherein the second surface has a plurality of surface discontinuities formed therein; and

a plurality of unshrouded compression blades each having a tip which extends into line on line relationship with the first inwardly facing surface of said shroud at the design operating condition of the compression stage.

4,239,453
MEANS FOR REDUCING CAVITATION-INDUCED EROSION OF CENTRIFUGAL PUMPS

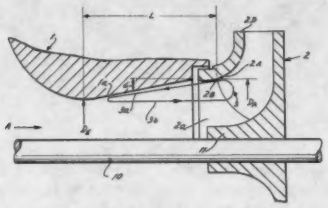
Peter Hergt, Ludwigshafen; Peter Buschsieper, Freinsheim, and Heinz-Bernd Matthias, Frankenthal, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker AG., Frankenthal, Fed. Rep. of Germany

Continuation of Ser. No. 747,616, Dec. 6, 1976, abandoned. This application Feb. 21, 1979, Ser. No. 13,624

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1975, 2588403

Int. Cl.³ F01D 25/24

U.S. Cl. 415—182 10 Claims



1. In a centrifugal pump with a wide range of operating points without cavitation, a combination comprising a rotary impeller including a plurality of vanes and having an annular intake for admission of fluid, an inlet edge where said vanes begin, and an internal surface located immediately downstream of said inlet edge and diverging in the direction of fluid flow at an angle of between 8 and 20 degrees; and a cavitation-reducing diffuser located upstream of said intake, said diffuser defining a passage having a first cross section of smaller area which is remote from and a second cross section of larger area which is nearer to said intake, the area of said first cross section being between one-half and nine-tenths of the area of said second cross section and insuring the maximum flow rate at the design duty point.

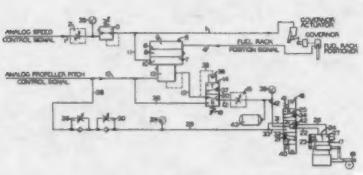
4,239,454
OVERLOAD PROTECTION CONTROL CIRCUIT FOR MARINE ENGINES

Paul E. Olson, Lexington, Ky., assignor to American Standard Inc., Lexington, Ky.

Filed Aug. 24, 1978, Ser. No. 936,670

Int. Cl.³ B63H 3/10

U.S. Cl. 416—27 5 Claims



1. An overload protection circuit for a marine engine comprising:

(a) servo-positioning means including a double-acting piston device and gear means connected thereto and operable thereby for setting propeller pitch, either forward or reverse, in accordance with the predominating one of respective opposing fluid pressure signals acting on opposite sides of said piston device;

(b) relay valve means including a pair of opposingly arranged pressure chambers;

(c) first conduit means for transmitting an operator-initiated fluid pressure speed control signal to one of said pressure chambers of said relay valve means and to a fuel rack positioner device, said fuel rack positioner being effective for producing a backfeed fuel rack position signal transmitted to the other of said pressure chambers of said relay valve means,

(d) said relay valve means being operable for producing a fluid pressure propeller pitch correction signal, in accordance with the ratio of said speed control signal and said fuel rack position signal, and transmitting said correction signal to one side of said opposite sides of said double-acting piston device and effecting both direction and degree of propeller pitch accordingly;

(e) second conduit means for transmitting an operator-initiated fluid pressure propeller pitch control signal to the other side of said opposite sides of said piston device and cooperating with said correction signal for setting the position of the piston device and consequently propeller pitch in accordance with the relationship of the respective fluid pressure signals acting concurrently on said opposite sides,

(f) said piston device being operable to assume a neutral position in which propeller pitch is zero when the pressures acting on said opposite sides are equal; and

(g) overload limiting valve means interposed in said second conduit means between said relay valve means and said servo-positioning means, said overload limiting valve means having a preset pressure limit and being operable responsively to said correction signal at a pressure exceeding said pre-set pressure limit, to a certain supply position in which said fluid pressure pitch control signal is communicated concurrently to both said opposite sides of said piston device for effecting operation thereof to its said neutral position in which propeller pitch is reduced to zero.

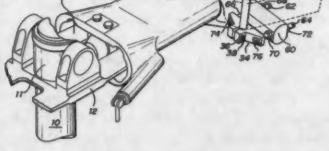
4,239,455
BLADE-MOUNTED CENTRIFUGAL PENDULUM

Willem Broekhuizen; Troy M. Gaffey, both of Arlington; Mukund M. Joglekar, Euless, and William D. Neathery, Fort Worth, all of Tex., assignors to Textron, Inc., Providence, R.I.

Filed Sep. 11, 1978, Ser. No. 941,134

Int. Cl.³ B64C 27/32

U.S. Cl. 416—145 10 Claims



1. Apparatus for reducing vibrations at the hub of a helicopter rotor assembly which has a plurality of blades, each affixed to a blade grip that is secured to the hub which is mounted on a rotatable mast, the combination comprising:

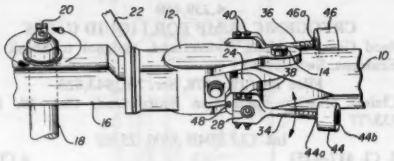
(a) a pair of pivot means, one extending through each said grip diametrically opposed and equidistant from the axis of said mast and substantially perpendicular to the chord axis of the blade adjacent said pivot means, and

(b) masses mounted in the form of simple pendulums, two on each said pivot means and symmetrical to the feathering axis of the adjacent blade.

4,239,456
ROTOR BLADE OUT-OF-PLANE CENTRIFUGAL PENDULUMS

Mukund M. Joglekar, Euless; Troy M. Gaffey; Willem Broekhuizen, both of Arlington, and William D. Neathery, Fort Worth, all of Tex., assignors to Textron, Inc., Providence, R.I.

Filed May 10, 1979, Ser. No. 37,658
Int. Cl.[3] B64C *27/32*
U.S. Cl. 416—145 15 Claims



1. Apparatus for reducing oscillatory shear forces in a helicopter rotor assembly having a plurality of blades, each blade affixed to a blade grip which is secured to a hub that is mounted on a rotatable mast, the combination comprising:

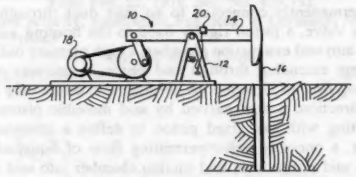
(a) a set of pivot means, one pivot means corresponding with each said grip and said blade affixed thereto, said pivot means equidistant from the axis of said mast and each pivot means substantially parallel to the chord plane of the corresponding blade, and

(b) masses mounted in the form of simple pendulums, two on each said pivot means, said masses on each of said pivot means further mounted for rotation with the corresponding blade about the pitch axis thereof.

4,239,457
REMOTE RESET

R. C. Langford, Box 227, Rule, Tex. 79547

Filed Jun. 28, 1979, Ser. No. 52,791
Int. Cl.[3] F04B *49/00*
U.S. Cl. 417—33 8 Claims



1. In a vibration switch having

a. a housing,

b. electrical conductors entering said housing,

c. vibration elements within said housing for changing the resistence between said electrical conductors responsive to vibration,

d. a reset button on said housing for resetting said vibration elements within the housing to their original condition,

e. said vibration switch mounted at a remote location, wherein the improvement comprises the improved structure for pushing said reset button and thus resetting the switch:

f. a pivot pin mounted on the housing of the vibration switch,

g. a finger pivoted to the pin,

h. a spring biasing the finger away from the reset button,

i. a cord attached to the finger so that when the cord is pulled the finger pushes against the button resetting the same.

5. On an oil well having

a. sucker rod,

b. a pump jack for reciprocating said sucker rod,

c. said pump jack including

(i) samson post, and

(ii) a walking beam, and

d. a vibration switch including

e. a housing,

f. electrical conductors entering said housing,

g. vibration elements within said housing for changing the resistence between said electrical conductors responsive to vibration,

h. a reset button on said housing for resetting said vibration elements within the housing to their original condition,

j. said vibration switch mounted on the pump jack at a remote location,

wherein the improvement comprises the improved structure for pushing said reset button and thus resetting the switch:

k. a pivot pin mounted on the housing of the vibration switch,

m. a finger pivoted to the pin,

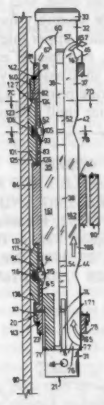
n. a spring biasing the finger away from the reset button,

o. a cord attached to the finger so that when the cord is pulled the finger pushes against the button resetting the same.

4,239,458
OIL WELL UNLOADING APPARATUS AND PROCESS

Connie M. Yeatts, P.O. Box 366, Bridgeport, Tex. 76026

Filed Dec. 5, 1978, Ser. No. 966,619
Int. Cl.[3] F04B *47/12*
U.S. Cl. 417—60 6 Claims



1. An oil well unloading apparatus comprising an inner core assembly and an outer shell assembly;

(a) said inner core assembly extending longitudinally and located slidably in a longitudinal direction within said shell assembly,

(1) said inner core assembly comprising an upper head member, a plate assembly and a lower foot, all firmly attached together;

(i) said plate assembly comprising a plurality of like spaced apart axially symmetrically arrayed rigid longitudinally extending flat plates, each of said plates having a longitudinally extending radial edge, each of said plates attached to said foot and to said head member,

(ii) each of said plates having (a) an upper shoulder extending radially of said plate's radial edge and (b) a lower tangentially and downward extending surface extending toward an adjacent plate of said plate assembly in a first circumferential direction,

(2) said foot having at its top a lower inlet orifice sealing surface located below said tangentially and downward extending surface and said lower orifice sealing surface extending radially of said radial edge of said plates,

(3) said head member comprising a rigid plate extending transversely of the length of said plates and attached to the top thereof,

(b) said outer shell assembly comprising a base shell unit and a set of seal units, said set comprising a plurality of like seal units,

(1) said base shell unit being a hollow rigid member and having at its bottom a transversely extending upper inlet orifice sealing surface and said base shell unit having at its top an upper rigid edge having a greater internal diameter than the external diameter of the radial edges of said plates,

(2) said seal units each having an outer surface in the shape of a hollow cylindrical segment, said cylindrical segment being a portion of a right circular cylinder with a central longitudinal axis parallel to the length of said base shell unit, said set of seal units circumscribing said base shell unit and attached thereto movably,

(3) holding means on said base shell unit extending radially of and engaging a portion of each said seal unit,

(4) said seal units having a portion that extends radially beyond the radial extent of said base shell unit,

(5) longitudinal and radially extending openings in said base shell unit and in each of said seal units, and keying members in said openings for radial motion of each said seal unit with respect to said base shell unit,

(6) securing means between said core unit and base shell unit for providing only relative longitudinal movement of said core assembly and said base shell unit,

(c) each plate shoulder of said core assembly extending above said base shell unit upper edge, said lower inlet orifice sealing surface on said core assembly foot being located below said transversely extending upper inlet orifice sealing surface of said base shell unit, and means extending between said core assembly and said shell assembly for releasably holding said core assembly on one position against longitudinal motion relative to said outer shell assembly.

4,239,459

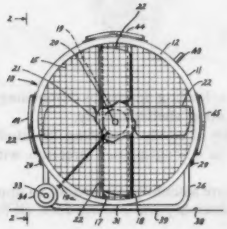
FAN WITH ADJUSTABLE LEGS FOR IMPROVING BUILDING HEATING AND COOLING

John V. Felter, P.O. Box 38271, Houston, Tex. 77088

Division of Ser. No. 875,335, Feb. 6, 1978, abandoned. This application Jul. 27, 1979, Ser. No. 61,487

Int. Cl.³ F04B *21/00;* **F16M** *11/38*

U.S. Cl. 417—234 **6 Claims**



1. Air propelling apparatus, comprising a housing having an air inlet in line with an air outlet, means for supporting an electric motor within said housing with its shaft in line between said inlet and said outlet, blade means carried by said shaft circularly spaced and outwardly disposed therearound, means for connecting said electric motor to an electric power source to enable operation of said electric motor, said housing including at least three leg means spaced about said air inlet for supporting said housing means with said air inlet and said air outlet in line vertically, each said leg means comprising angular bar means pivotally fixed at each of its ends to said housing adjacent the edge of said air inlet and each being movable between a first position against the exterior of said housing and a second position parallel with the wall of said housing and extending therefrom, and detent means for releasably restraining each end of each said bar means in each of said first and second positions.

4,239,460

CRYOGENIC PUMP FOR LIQUID GASES

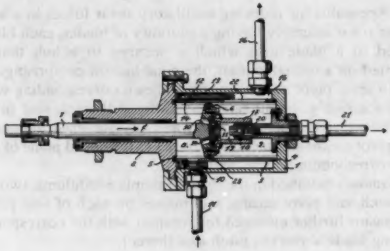
Roland Gölz, Ecublens, Switzerland, assignor to Socsil S.A., Ecublens, Switzerland

Filed Sep. 19, 1978, Ser. No. 943,625

Claims priority, application Switzerland, Oct. 19, 1977, 12733/77

Int. Cl.³ F04B *3/00, 25/02*

U.S. Cl. 417—251 **4 Claims**



1. A cryogenic pump for liquid gases, comprising a housing, a cylinder within the housing, a piston reciprocable in the cylinder and dividing the cylinder into a suction chamber and an evacuation chamber on opposite sides of the piston, a one-way valve for admitting liquefied gas into said suction chamber, an overflow duct for exhausting fluid from said evacuation chamber, said overflow duct being permanently and directly connected to said evacuation chamber, said suction chamber being permanently connected to an inlet duct through said one-way valve, a piston rigidly fixed to the housing and extending into said evacuation chamber, a high pressure outlet of said pump extending through said piston, a one-way valve permitting flow of liquefied gas through said outlet only in an outlet direction, a skirt carried by said movable piston and cooperating with said fixed piston to define a compression chamber, a one-way valve permitting flow of liquefied gas through said piston from said suction chamber into said compression chamber, another one-way valve that connects the suction chamber to the overflow duct for evacuation from the suction chamber of that fluid which is in excess of the liquefied gas necessary to fill said compression chamber, and means directly interconnecting said suction chamber with said outlet duct when said piston is adjacent the end of its movement into he evacuation chamber, thereby to exhaust from said suction chamber any said gas which is in vapor phase.

4,239,461

COMPRESSOR INDUCTION SYSTEM

John P. Elson, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Nov. 6, 1978, Ser. No. 958,357

Int. Cl.³ F04B *39/00*

U.S. Cl. 417—312 **21 Claims**

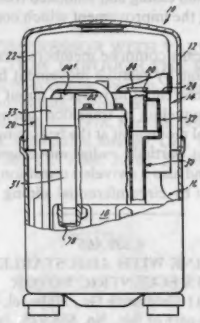
1. A hermetic compressor comprising:

an outer shell;

compressor means mounted within said shell;

motor means secured to said compressor means; and

elongated suction conduit means having one end secured to said compressor means, said suction conduit means defining a relatively unrestricted suction gas flow path therethrough for conducting suction gas from the interior of said shell to said compressor means, said suction conduit means including an elongated substantially closed noise



attenuating chamber having a longitudinal axis disposed in substantially parallel offset relationship to the axis of said suction gas conduit, said chamber being positioned intermediate the ends of said conduit and an opening in said conduit for placing said chamber in communication with said suction gas flow path.

4,239,462

HEAT BARRIER FOR MOTOR-PUMP AGGREGATES

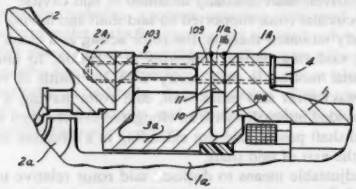
Holger Dach; Christian Klepp; Günter Koll, all of Frankenthal; Josef Lacroix, Weidenthal; Heinz-Bernd Matthias, Frankenthal, and Horst Vogel, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,752

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710443

Int. Cl.³ F04B *39/06*

U.S. Cl. 417—373 **8 Claims**



1. In a motor-pump aggregate, particularly for conveying of fluids which are maintained at an elevated temperature, the combination of a motor housing; a pump housing spaced apart from said motor housing; a heat barrier interposed between said housings and including spaced-apart first and second end portions respectively abutting against said motor housing and said pump housing, and a plurality of heat dissipating elements extending between and rigid with said end portions and forming two concentric annuli of different diameters; and means for fastening said heat barrier to said housings, including connectors forming an annulus concentric with and having a diameter between those of said annuli of heat dissipating elements.

4,239,463

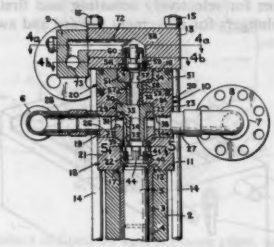
RECIPROCATING PLUNGER PUMP WITH IMPROVED LIQUID END VALVE ASSEMBLY

Charles Yaindl, Harrison, N.J., assignor to Worthington Pump, Inc., Mountainside, N.J.

Filed Sep. 28, 1978, Ser. No. 946,557

Int. Cl.³ F04B *21/00, 39/08*

U.S. Cl. 417—454 **9 Claims**



1. In a reciprocating plunger pump having, at least one pumping chamber, a plunger connected for reciprocating movement in said plunger chamber, common inlet manifold means for delivering fluid to be pumped, common outlet manifold means for passing pumped fluid from said reciprocating plunger pump, and valve assembly means having a discharge passage extending end to end therethrough connected to said plunger pump for communication with and in the longitudinal axis of the pumping chamber,

a. multi-element suction inlet assembly means removably connected in said valve assembly means and having the end of said discharge passage adjacent the pump chamber extending therethrough,

b. said suction inlet assembly means having, a suction inlet passage radially outward, concentric to and parallel to said pumping chamber end of the discharge passage and having one end connected to the inlet manifold means to receive fluid to be pumped therefrom and communicating at the opposite end with means on the suction inlet assembly means defining a suction inlet port for delivering the fluid to be pumped to the pumping chamber,

c. suction inlet valve head means disposed to normally maintain said suction inlet port closed and movable to open said suction inlet port on downward movement of said plunger, and

d. an independent discharge outlet assembly removably connected in said valve assembly means at the end of the fining a discharge port in communication with the outlet manifold for delivering pumped fluid thereto, and

e. discharge outlet valve head means operative to normally close the discharge port and movable to open position on upward movement of said plunger.

4,239,464

BLOOD PUMP

Lars Hein, Horsholm, Denmark, assignor to Polystan A/S, Herlev, Denmark

Filed Oct. 10, 1978, Ser. No. 950,116

Claims priority, application Denmark, Oct. 14, 1977, 4574/77

Int. Cl.³ F04B *43/14*

U.S. Cl. 417—474 **4 Claims**

1. A blood pump comprising:

an elongated flexible tube defining a flow path for the blood;

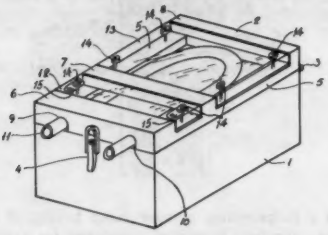
inlet valve means for selectively restricting flow through said tube at a first longitudinal position along said tube, said inlet valve means comprising a first flat-surfaced plunger valve and a first fixed flat wall portion disposed in movable spaced relation on opposite sides of said tube at said first position;

outlet valve means for selectively restricting flow through

said tube at a second longitudinal position along said tube, said outlet valve means comprising a second flat-surfaced plunger valve and a second fixed flat wall portion disposed in movable spaced relation on opposite sides of said tube at said second position;

displacement means comprising a third plunger valve and a third fixed wall portion disposed in movable spaced relation on opposite sides of said tube at a third position intermediate said first and second positions;

actuator means for selectively actuating said first, second and third plungers for movement toward and away from



said first, second and third wall portions, respectively, in a prescribed sequence so as to sequentially restrict said tube at said first, second and third positions; and

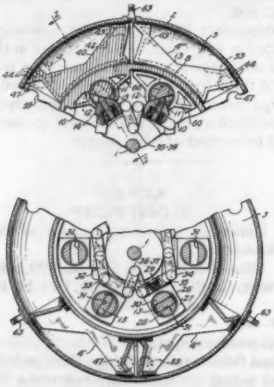
adjustment means for limiting the restriction of said flow tube at least at one of said first and second positions by adjusting said spaced relation of at least one of said first and second fixed flat wall section such that a passage for blood flow through said tube is provided when the tube is in its most restricted condition at said at least one position, said passage having a length in the flow direction of at least 5 mm and having a restriction height of less than 0.5 mm.

4,239,465

ROTARY MOTOR WITH ALTERNATING PISTONS

Claude Guillaume, 57b rue de la Paix-57, Rombas, France

Filed May 30, 1978, Ser. No. 910,288
Claims priority, application France, Jun. 3, 1977, 77 17019
Int. Cl.³ F01C *1/063*
U.S. Cl. 418—35 **15 Claims**



1. A rotary internal combustion motor comprising a toroidal chamber, a stationary casing for mounting said chamber and for mounting machinery of said motor adjacent to said chamber and in the vicinity of the axis of said chamber, a rotor mounted on said casing for rotation coaxially with said toroidal chamber, at least two pistons movable relative to each other in said toroidal chamber in motion swinging about said axis of said chamber, coupling means for locking each of said pistons, in the circumferential direction about said axis, alternately to said rotor and to said casing, in such a way that each piston is locked to said rotor and unlocked from said casing while the other is locked to said casing and unlocked from said rotor, and further comprising the improvement which consists, at least, in that:

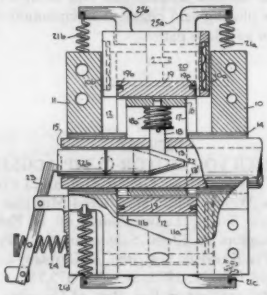
said coupling means comprise members arranged to engage and to disengage by relative movement having a component of circumferential movement about said axis and to provide by swiveling a transition between completely circumferential movement at the beginning of engagement and an at least partially radial movement at the end of engagement and also a swiveled transition preparatory for disengagement by circumferential sliding movement.

4,239,466

ROTARY MACHINE WITH ADJUSTABLE MEANS FOR ITS ECCENTRIC ROTOR

Harold G. Abbey, 11 Goldsmith Dr., Holmdel, N.J. 07733

Continuation-in-part of Ser. No. 586,925, Jun. 18, 1975, abandoned. This application Jan. 22, 1979, Ser. No. 5,479
Int. Cl.³ F04C *23/00, 29/10*
U.S. Cl. 418—11 **10 Claims**



1. In a rotary machine, the combination comprising:

(A) a stator provided with a cavity having a continuous inner wall;

(B) a driven shaft coaxially mounted in said cavity;

(C) a circular rotor supported on said shaft and having a ring freely mounted thereon, the rotor acting as a crank causing said ring, which functions as a piston, to undergo orbital motion in said cavity with its zenith in rolling contact with said inner wall, said rotor having a body provided internally with an elongated slot through which said shaft passes, said slot extending in a direction normal to the axis of said shaft;

(D) adjustable means to displace said rotor relative to said shaft from a zero position in which the axis of the rotor is aligned with the axis of the shaft to positions in which the rotor is eccentric with respect thereto within the limits of the slot, thereby to vary the eccentricity of said rotor and hence the capacity of the machine, said adjustable means including a bolt axially shiftable within a longitudinal bore in said shaft and terminating in a cam engaging one end of a pin disposed within said slot at right angles to said shaft, the other end of said pin engaging the inner wall of the rotor body in the middle portion along the width thereof whereby an axial shift of said bolt causes lateral displacement of said rotor relative to the shaft; and

(E) a helical bias spring disposed in said slot and surrounding said pin to urge said rotor body against the ring to main-

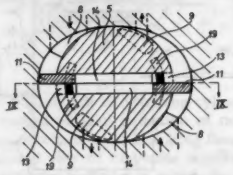
tain the zenith of the ring in contact with the inner wall of the cavity throughout said orbital movement.

4,239,467

ROTARY COMPRESSOR WITH VALVED LIQUID INJECTION THROUGH THE ROTOR

Rune V. Glanvall, Norrkoping, Sweden, assignor to Stal Refrigeration AB, Norrkoping, Switzerland

Filed Oct. 12, 1978, Ser. No. 950,558
Claims priority, application Sweden, Oct. 13, 1977, 7711558
Int. Cl.³ F04C *29/02, 29/08*
U.S. Cl. 418—76 **4 Claims**



1. A rotary compressor of the sliding vane type comprising a housing having an inner surface and provided with inlet ports for a gas to be compressed and with outlet ports for compressed gas, a cylindrical rotor journalled in the housing for rotation about an axis and having slots opening through the peripheral surface of the rotor, vanes movable in said slots generally radially of the rotor and adapted to slide sealingly against said inner surface of the housing, the vanes being movable periodically inward and outward in the slots during rotation of the rotor, working chambers being formed between the rotor, said inner surface of the housing and the vanes, the rotor having conduits for liquid injection, said conduits having inlets in at least one end wall of the rotor and having outlets in said peripheral surface of the rotor toward the working chambers, and valve members movable in response to movement of the vanes and operable to open and close said conduits between said inlets and outlets in synchronization with said periodic moving of the vanes, the housing having internal end walls opposing the end walls of the cylindrical rotor, said outlet ports being located in at least one of said housing end walls, the rotor conduits including recesses coacting with said outlet ports to form outlet paths for compressed gas, said valve members being piston elements movable in said recesses at locations diametrically opposite respective vanes, the piston elements being operable periodically, during rotation of the rotor, to gradually fill said recesses and simultaneously block liquid flow through the rotor conduits.

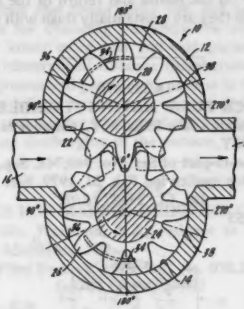
4,239,468

APPARATUS FOR CONTROLLING PRESSURE DISTRIBUTION IN GEAR PUMP

Brian W. Smith, Wooster, Ohio, assignor to The Rexroth Corporation, Bethlehem, Pa.

Filed Sep. 8, 1978, Ser. No. 940,808
Int. Cl.³ F04C *2/18*
U.S. Cl. 418—78 **16 Claims**

1. In a pressure plate adapted for use in a gear pump including a pair of gears defining pockets between adjacent teeth thereof, said pockets normally being sealed from communication with the pump inlet and outlet as said teeth rotate between inlet and outlet seal points; the improvement comprising slip



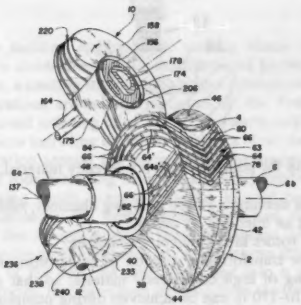
passage means defined by said pressure plate, said slip passage means communicating selected ones of said sealed pockets.

4,239,469

SEALS FOR A ROTARY MACHINE

Gail W. Kemp, 9622 Vinewood Dr., Dallas, Tex. 75228

Continuation-in-part of Ser. No. 779,172, Mar. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 544,427, Jan. 27, 1975, Pat. No. 4,013,046. This application Dec. 5, 1977, Ser. No. 857,208
Int. Cl.³ F01C *1/08, 19/04*; F04C *27/00*
U.S. Cl. 418—117 **33 Claims**



1. Improved seal apparatus for use in a rotary engine wherein a rotor is secured to a shaft which extends through end walls of a housing, the rotor being rotatively disposed in a circular working section in a hollow housing and cooperating with a rotating divider valve and a rotating compression-expansion valve to divide the hollow interior of the housing into an intake-compression space and an expansion-exhaust space, the improved seal apparatus comprising: a plurality of spaced seal bars being individually recessed in grooves in a piston formed on the rotor, said seal bars being adapted to seal between the piston and the housing in a direction normal to the direction or rotation of the rotor; said seal bars further being substantially flush with the adjacent piston surface; means to urge said seal bars into a sealing position against the housing, connector means radially restraining said seal bars and allowing limited circumferential movement of said seal bars; runner bars connecting said seal bars, said runner bars connecting forward and trailing seal bars to said piston, said seal bars and spaced runners substantially conforming to the adjacent piston surface contour, said grooves having sufficient clearance to accommodate movement of a seal bar relative to radial in and

out movement of the runner bars and thermal expansion and contraction, said seal bars having a joint formed therein, said joint being adapted to permit spreading of the seal bars to allow assembly on the piston and return of the seal bars to a position wherein they are substantially flush with the surface of the piston.

4,239,470

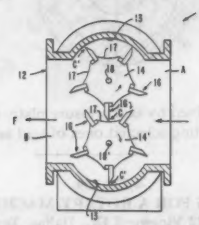
THICK STOCK PUMP HAVING FLEXIBLE BLADES

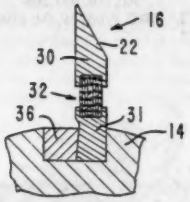
Michael I. Sherman, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Continuation-in-part of Ser. No. 940,741, Sep. 8, 1978, abandoned. This application Feb. 23, 1979, Ser. No. 14,363

Int. Cl.³ F04C 18/02

U.S. Cl. 418—153 **1 Claim**





1. A pump for pumping high consistency material, comprising:

means for defining a closed pumping chamber, said chamber having an inlet and an outlet;

a pair of rotors in the pumping chamber;

means for transforming rotation of said rotors into linear pumping of high consistency material so that a head of about 10–170 ft. can be achieved during pumping of high consistency material and so that damage will not occur to the pump when tramp metal or the like is contained within the high consistency material pumped, said means comprising a plurality of blades associated with each rotor and extending radially therefrom which remain rigid during pumping of high consistency material but flex only so as to prevent damage to any pump components when tramp metal or the like is encountered thereby;

each said blade comprising a tip portion of relatively rigid material and a base portion of relatively rigid material, and an intermediate portion connecting said tip and base portions, said intermediate portion being flexible so that said blade flexes only at said intermediate portion when tramp metal or the like is encountered thereby;

means for rotating said rotors in opposite angular directions, said means including a shaft associated with each rotor; and

means for mounting said rotor shafts so that each blade from one rotor sequentially cooperates with but does not substantially engage a circumferential surface of the other rotor intermediate two blades of the other rotor, during continued rotation of said rotors, and so that each blade sequentially cooperates with but does not substantially engage an interior portion of said means defining a closed pumping chamber during continued rotation of said rotors.

4,239,471

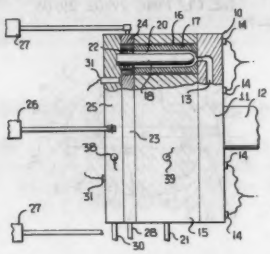
THERMAL ALIGNMENT OF CORES AND CAVITIES IN MULTI-CAVITY INJECTION MOLDS

Nareshwar Swaroop, Mount Vernon, Ohio, assignor to The Continental Group, Inc., New York, N.Y.

Filed Dec. 6, 1979, Ser. No. 100,793

Int. Cl.² B29F 1/08

U.S. Cl. 425—144 **8 Claims**



1. In a multi-cavity injection mold assembly comprising a cavity retainer plate having therein a plurality of mold cavities, a core projecting into each mold cavity, and a core retainer plate; coolant means for cooling said mold cavities, said cavity retainer plate and said core retainer plate: the improvement comprising heating elements in said core retainer plate and control means for said heating elements for maintaining said core retainer plate at the same temperature as said cavity retainer plate.

4,239,472

CLAMPING RING FOR VACUUM-FORMING APPARATUS

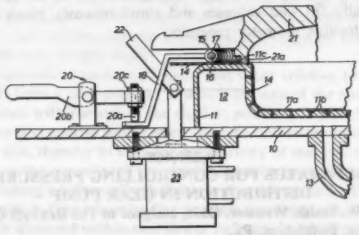
Geoffrey R. Atkinson, Rothersthorpe, and Alan J. Edwards, Northampton, both of England, assignors to UOP Inc., Des Plaines, Ill.

Filed May 22, 1979, Ser. No. 41,470

Claims priority, application United Kingdom, May 26, 1978, 23273/78

Int. Cl.² B29C 17/00

U.S. Cl. 425—388 **5 Claims**



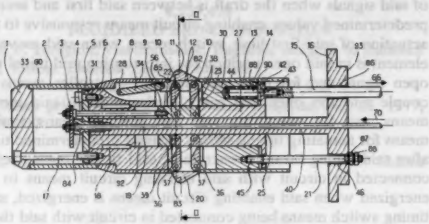
1. In apparatus for use in the vacuum-forming of sheet material in a mould, a clamping ring for slidably engaging the sheet material and clamping it to the mould, the clamping ring comprising a plurality of rollers rotatably mounted axially on a single annular support in close proximity to each other.

4,239,473

MANDREL WITH RETRACTABLE SEGMENTS

H. Lucien Fulhaber, Cernay, France, assignor to Papenmeier France Sarl, Dannemarie, France

Filed Jun. 27, 1979, Ser. No. 52,579
Claims priority, application France, Jun. 30, 1978, 78 19709
Int. Cl.[2] B29C *17/00*; B29D *23/00*
U.S. Cl. 425—392 **13 Claims**



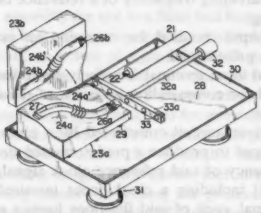
1. A mandrel with at least two shaping cylindrical surfaces, successively arranged in axial extension of one another between the free mandrel end and a mounting flange, comprising a first and a second row of moveable segments which can assume a first extended position in which the radially outer surface of the segments associated alternately with the different rows in the peripheral direction form a continuous torus which separates the two cylindrical shaping surfaces from one another, and which can assume a second retracted position in which the distance from the radially outer surface thereof to the axis is smaller than the radius of the cylindrical shaping surfaces and the segments of one row can be axially displaced with respect to those of the other row, further comprising actuating means for bringing about the extension and retraction movements, wherein said actuating means comprises a first and a second bush which are arranged in axially moveable manner within the first and the second shaping surfaces respectively and on which the segments of the first and second rows of segments are pivotably mounted by means of two parallel, axially displaced joints, and wherein orthogonal support surfaces are provided for the axial retaining of the segments during their radial movement together with means for displacing the first and the second bush respectively.

4,239,474

APPARATUS FOR MOLDING A PLASTIC PIPE

Tatsuya Nakagawa, Matsudo, Japan, assignor to Excell Corporation, Tokyo, Japan

Filed Jun. 29, 1979, Ser. No. 53,210
Int. Cl.[3] B29C *17/07*
U.S. Cl. 425—525 **9 Claims**



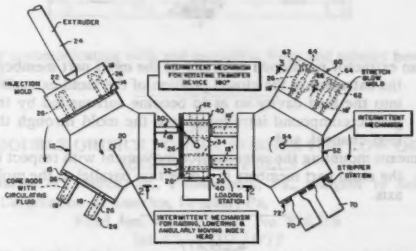
1. An apparatus for molding a plastic pipe comprising a lower mold half having a top surface provided with a first groove of a desired shape, an upper mold half having a bottom surface provided with a second groove of a shape corresponding to the shape of the first groove, said first and second grooves defining a mold cavity when said top and bottom surfaces are in contact, a parison extruder including a nozzle for discharging a parison into and along the first groove of said lower mold half, means for changing horizontally the relative position between said lower mold half and said parison extruder, means for changing vertically the relative position between said lower mold half and said parison extruder to maintain a predetermined distance therebetween, and means for injecting pressurized gas into the parison in the mold cavity for shaping as defined by the mold cavity, wherein the means for changing said relative horizontal and vertical positions are operable during discharging of the parison.

4,239,475

APPARATUS FOR MAKING ORIENTED CONTAINERS

Dewey Rainville, Westfield, N.J., assignor to Rainville Company, Inc., Middlesex, N.J.

Filed Dec. 18, 1978, Ser. No. 970,382
Int. Cl.[3] B29C *17/07*
U.S. Cl. 425—526 **14 Claims**



1. Blow molding apparatus for making plastic containers including in combination a first indexing head having an injection station, a treating station and a stripper station at angularly spaced locations around the perimeter of the first indexing head, a second indexing head having angularly related operational stations including a transfer station, a blow station and a stripper station around the perimeter of the second indexing head, core rods extending from the angularly related faces of both indexing heads, a transfer device located between the stripper station of the first indexing head and the transfer station of the second indexing head, and means to move the transfer device into a position to receive parisons stripped from core rods of the first indexing head, and into a position to supply parisons, that have been stripped from the first indexing head, to core rods of the second indexing head.

4,239,476

MOLD FOR PRODUCING MOLDINGS FROM A PLASTIC COMPOUND

Hans F. Somberg, S-123 57, Farsta, Sweden

Filed Oct. 2, 1979, Ser. No. 81,160
Claims priority, application Sweden, Oct. 3, 1978, 7810352
Int. Cl.[2] B29F *1/00*
U.S. Cl. 425—556 **6 Claims**

1. A mold for producing moldings from a plastic compound, comprising

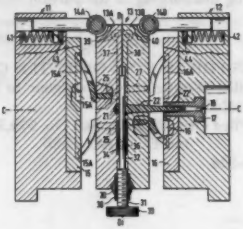
an intermediate mold part having two mold part members disposed side by side on a mold axis,

a pair of outer mold parts on opposite sides of the intermediate mold part, each outer mold part defining a mold cavity jointly with the adjacent face of the adjacent mold part member, one of the outer mold parts having a feed channel for the plastic compound,

means mounting the outer and intermediate mold parts for relative movement of the outer mold parts and the mold part members along the mold axis between a closed position in which confronting faces of the mold part members

engage one another and each outer mold part engages the adjacent one of the mold part members and an open position in which the mold part members are spread apart from one another and from the outer mold parts,

means on said confronting faces of the mold part members defining a feed cavity, which in the closed position of the mold communicates with the feed channel of said one outer mold part, and sections of runner channels extending from the feed cavity to the mold cavities,



an extractor positioned centrally of the mold part members, the extractor in the closed position of the mold extending into the feed cavity so as to become surrounded by the plastic compound introduced into the mold through the feed channel, and

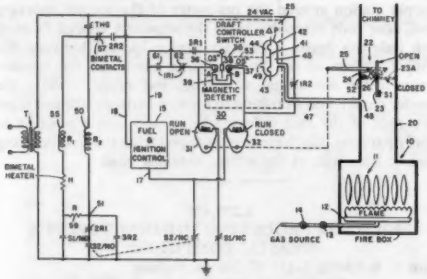
means mounting the extractor for movement with respect to the mold part members in a direction parallel to the mold axis.

4,239,477

FURNACE IGNITION SYSTEM WITH DRAFT CONTROL AND LOSS-OF-DRAFT PROTECTION

Thomas E. Hayes, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Nov. 13, 1978, Ser. No. 959,765
Int. Cl.³ F23N *3/00*
U.S. Cl. 431—20 **8 Claims**



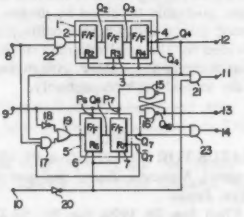
1. In combination with a furnace having a firebox and adapted to be connected to a source of fuel by means of fuel control means, a movable element movable between a closed and an open position for controlling the flow of air through a firebox of said furnace, and a thermostat for generating a call for heat signal from a space to be heated by said furnace, the improvement comprising: flue means for communicating combustion gases from said firebox to a chimney and substantially free of losses to the atmosphere between said firebox and chimney; motor means responsive to a run open signal for operating said movable element toward said open position and responsive to a run closed signal for operating said element toward said closed position; first limit switch means actuated when said movable element is in said open postion; second limit switch means actuated when said movable element is in said closed position; holding circuit means responsive to a call for heat signal only when said second limit switch means is actuated for generating an initial run open signal to said motor means; controller means including pressure sensing means responsive to the pressure in said flue means for generating a run open signal when the draft in said flue means is less than a first predetermined value, and for generating a run closed signal when the draft in said flue means is greater than a second predetermined value, said controller means generating neither of said signals when the draft is between said first and second predetermined values; enabling circuit means responsive to the actuation of said first limit switch means when said movable element is in said open position for interrupting said initial run open signal and for then enabling said controller means to couple said run open and run closed signals to said motor means, and for energizing said fuel control means; timing means for actuating timing switch means a predetermined time after said timing means is energized, said timing means being connected in circuit with said enabling circuit means to be energized when said enabling circuit means is energized, said timing switch means being connected in circuit with said thermostat contacts and said controller means to de-energize said controller means and said fuel control circuit said predetermined time after said timing means is energized if said timing means is not de-energized in said predetermined time; said first limit switch means deactuating said timing circuit means when said movable element is moved from said fully open position in response to the establishment of a normal draft.

4,239,478

CHECK CIRCUIT FOR COMBUSTION PROCESS CONTROL TIMER

Toshio Tanaka, Toride, and Sumio Nakagawa, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 7, 1978, Ser. No. 940,369
Claims priority, application Japan, Sep. 16, 1977, 52/110587
Int. Cl.³ F23N *5/24;* F23Q *23/00, 9/08;* F23N *5/00*
U.S. Cl. 431—24 **13 Claims**



1. A check circuit for checking operation of a timer for producing various timing signals to control combustion processes by dividing frequency of a reference clock pulse signal comprising:

a first input terminal for receiving an external reference clock pulse signal;

a second input terminal for receiving an external command signal for commanding initiation of the combustion processes;

a first timer circuit constituted by a plurality of flip-flops arranged to produce a predetermined timing by dividing frequency of said reference clock signal, said first timer circuit including a clock input terminal and an output terminal, each of said flip-flops having a preset terminal connected to said second input terminal;

a first logic gate having inputs respectively connected to said first and second input terminals and an output connected to said clock input terminal of said first timer circuit for inverting the state of said first timer circuit in response to said combustion process initiation command signal;

a flip-flop circuit having input terminals respectively con-

nected to the output terminal of said first timer circuit and said second input terminal; and

a first output terminal connected to the output terminal of said flip-flop circuit thereby to supply the output signal of said flip-flop circuit as a first driving signal to a first external control circuit to be connected to said first output terminal.

4,239,479

FLUIDIZED BED COMBUSTION

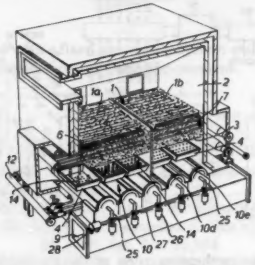
Alan F. Hodgkin, Hertfordshire, England, assignor to Babcock & Wilcox Limited, London, England

Filed Jul. 24, 1978, Ser. No. 927,035

Claims priority, application United Kingdom, Jul. 26, 1977, 31287/77

Int. Cl.³ F23D *19/00*

U.S. Cl. 431—170 **7 Claims**



1. A fluidised bed combustor having means for the supply of combustion air through the base of the bed, the means including two or more sources of air extending side-by-side and the combustor being such that the bed may tilt during operation about an axis extending longitudinally of the sources so that the depth of the bed above any source varies relatively to the depth of the bed above any other source with the angle of tilt, and means for controlling the supply of air from each source so that, throughout a range of tilting, as one source moves downwardly relative to another, the rate at which air is supplied from that source increases automatically relatively to the rate at which air is supplied from the other source.

4,239,480

FLUID BED FURNACE AND PILOT LIGHT ASSEMBLY

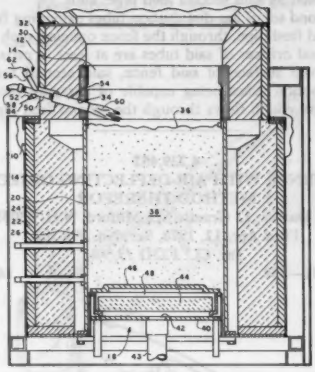
Charles E. Hyre, Chesterton, Ind., assignor to Fennell Corporation, Harvey, Ill.

Filed Nov. 6, 1978, Ser. No. 958,139

Int. Cl.³ F23Q *3/00*; F23D *19/02*

U.S. Cl. 431—264 **3 Claims**

1. A pilot light assembly for use in a fluid bed furnace of the type having a fluid bed comprising a material which fluidizes upon being subjected to a flow of a gas mixture therethrough and a burner for burning a fuel mixture for providing the fluidizing gas mixture at an elevated temperature, said pilot light assembly comprising: ignition means for providing a pilot flame; pilot flame confining means for directing said pilot flame into the furnace fluid bed above the fluidizable material for causing said pilot flame to ignite the burner fuel mixture; and pilot flame detecting means for sensing the presence of said pilot flame and enabling the supply of fuel mixture to the burner, said ignition means including a tubular housing and said pilot flame confining means comprising a tubular extension mounted to said ignition means tubular housing, said pilot flame detecting means including a rod member projecting into said tubular housing in the path of said pilot flame, said pilot light assembly further comprising a tubular member for supporting said rod member therein, said tubular housing and said tubular extension being axially aligned and said tubular member communicating with and extending from said tubular housing.



4,239,481

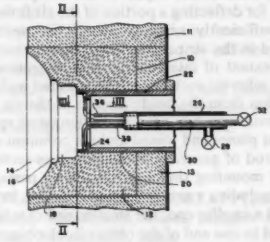
DOUBLE ORIFICE VORTEX BURNER FOR LOW OR HIGH WOBBE FUELS

Charles W. Morck, Jr., Philadelphia, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Jun. 19, 1978, Ser. No. 916,756

Int. Cl.³ F23D *13/12*

U.S. Cl. 431—284 **22 Claims**



1. A vortex burner for burning either high or low Wobbe fueis comprising:

(a) a burner block having a cup-shaped recess at one surface of said block and an opening extending from the base of said cup-shaped recess and extending to the opposite surface of said block;

(b) a burner tube adjacent to and extending through said block opening, and terminating in the vicinity of the base of said cup-shaped recess, said burner tube having an annular shaped fence extending from its inner surface, said fence being disposed on the burner tube toward the base of said cup-shaped recess;

(c) a first feed pipe disposed within said burner tube;

(d) a second feed pipe disposed within said first feed pipe, said first feed pipe being capable of carrying a first fuel gas through its opening not occupied by the second feed pipe, said second feed pipe being capable of carrying a second fuel gas of either a higher or lower Wobbe index than that of said first fuel gas;

(e) a first set of gas distribution tubes extending from said first feed pipe, through the fence opening such that the terminal orifices of said tubes are at least in proximity to

the front surface of said fence, said first set of gas distribution tubes being capable of carrying the first fuel gas which flows through that portion of the first feed pipe not occupied by said second feed pipe; and

(f) a second set of gas distribution tubes extending from said second feed pipe, through the fence opening such that the terminal orifices of said tubes are at least in proximity to the front surface of said fence, said second set of gas distribution tubes being capable of carrying the second fuel gas which flows through the second feed pipe.

4,239,482

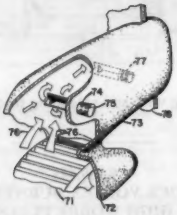
FUEL BURNER WITH AIR-DEFLECTING OBJECT AND METHOD THEREFOR

Edward P. Durfee, 12 Granite St., Milford, N.H. 03055

Filed Apr. 12, 1978, Ser. No. 895,702

Int. Cl.³ F23D *13/40*

U.S. Cl. 431—354 **16 Claims**



1. An improved fuel burner of the type having an air blower in a housing that is in communication with a blast tube (such housing and blast tube being collectively called the "air passageway"), such air blower giving rise to an air flow in the air passageway, wherein the improvement comprises:

an object, for deflecting a portion of the air flow, such object being sufficiently small so that it is capable of being mounted in the air passageway without causing an undesirable extent of interference with operation of the fuel burner, wherein such object as mounted includes a single protrusion from the inside surface of the air passageway, such protrusion having two prolongated spans lying in different planes and joined along a common edge so as to form a rod of generally V-shaped cross-section; and

means for mounting the object in the air passageway, such means including a gently tapered cylinder, having a larger end and a smaller end, the smaller end of which is rigidly attached to one end of the object (such object and tapered cylinder in combination being called the "device", having an "object end" at the non-attached end of the object and a "head" at the non-attached larger end of the tapered cylinder) so that the object can be mounted by insertion of the device, object end first, into a suitably formed hole in the air passageway and thereafter by engagement of the tapered cylinder, against the air passageway walls that form the hole, by tapping on the head of the device.

4,239,483

METHOD OF CONTROLLING STEEL STRIP TEMPERATURE IN CONTINUOUS HEATING EQUIPMENT

Hiroshi Iida; Ikuo Umehara, and Yasuo Takeda, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 950,521, Oct. 11, 1978, abandoned. This application Nov. 6, 1979, Ser. No. 91,818

Claims priority, application Japan, Oct. 20, 1977, 52/125092

Int. Cl.³ F27B *9/28;* C21D *9/54*

U.S. Cl. 432—8 **9 Claims**

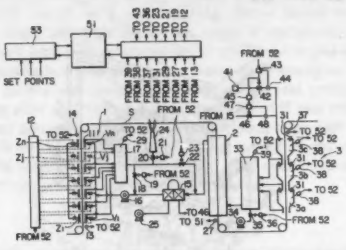
1. A method of controlling steel strip temperature in continuous heating equipment having a preheating zone and a subsequent rapid heating zone through which a strip having different thicknesses and prepared by welding together strips of different thickness is continuously transported at a fixed speed so that the strip temperature constantly reaches a given desired temperature at the exit end of the rapid heating zone irrespective of strip thickness, which method comprises:

arranging a number of individually controllable preheating units side-by-side in the preheating zone in the direction of strip travel for directing heating gas against the strip;

prefixing the in-operation length of the preheating zone irrespective of strip thickness for operation of the equipment for heating uniform thickness strip;

presetting the temperature of the rapid-heating zone according to the thickness of uniform thickness strip which is to be heated in said equipment so that the strip constantly acquires the desired temperature at the exit end thereof;

preheating uniform thickness strip during transport of the



strip in the preheating zone of the prefixed in-operation length and then rapidly heating the strip in the rapid heating zone which is at the preset temperature to attain the desired strip temperature at the exit end of said equipment; and

when transporting strip having a preceding portion having one thickness for which the operating conditions of the equipment have been set and a following portion having a different thickness from that of the preceding portion and which is connected to said preceding portion, changing the preset temperature of the rapid heating zone from that for the preceding portion to a temperature optimum for the following portion and adjusting the in-operation length of the preheating zone, during the transitional period in which the actual temperature of the rapid heating zone changes to the second preset level, to attain the desired strip temperature at the exit end of said equipment.

4,239,484

VACUUM OVEN WITH GAS COOLING DEVICE

Rolf Schuster, Hanau, Fed. Rep. of Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,779

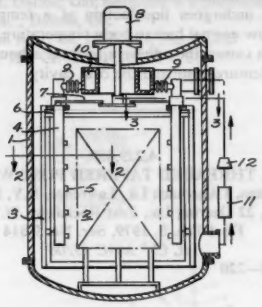
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839807

Int. Cl.³ F27D *15/02*

U.S. Cl. 432—77 **1 Claim**

1. A vacuum oven having a heating chamber and gas cooling means adapted to blow on a charge in the heating chamber of the oven with a cooling medium from nozzles arranged around the oven, said nozzles being arranged parallel to the axis of said oven and being positioned on gas inlet tubes rotatable around the axis of the oven; and drive means for reciprocating motion wherein the heating chamber is provided with heat insulation

and the gas inlet tubes project one-sidely out of the heat insulation chamber and are connected on these outer ends via flexi-



ble tube means with a fixed gas supply system and connected to said drive means for reciprocating movement.

4,239,485

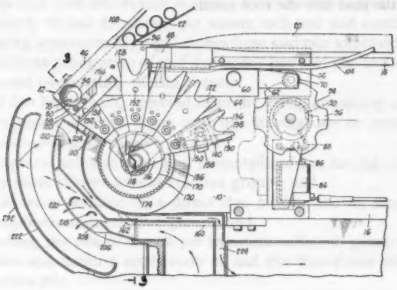
TAPED PRODUCTS PROCESSOR

Larry J. Marshall, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 931,545, Aug. 7, 1978, which is a division of Ser. No. 721,700, Sep. 9, 1976, abandoned. This application Feb. 16, 1979, Ser. No. 12,954

Int. Cl.³ F27B *9/00;* **F27D** *3/00;* **F26B** *13/30*

U.S. Cl. 432—121 **6 Claims**



1. A conditioned atmosphere process apparatus comprising
a product path;
a manifold having a first inlet, a first passageway extending to said first inlet, a first outlet, and a second passageway extending from said first outlet, said first inlet including an elongate inlet nozzle, said first outlet including an elongate outlet nozzle, said inlet nozzle and said outlet nozzle opening toward said product path with said elongate dimensions along said product path, said inlet nozzle being positioned centrally within said outlet nozzle and spaced inwardly from the periphery of said outlet nozzle;
an elongate baffle positioned across said product path from said inlet nozzle and said outlet nozzle and being concaved toward said nozzles, said first inlet exhausting outwardly from said inlet nozzle toward said baffle across said product path;
a conditioned atmosphere source extending to said first passageway;
a vacuum means associated with said second passageway having a flow rate capacity greater than that of said conditioned atmosphere source.

4,239,486

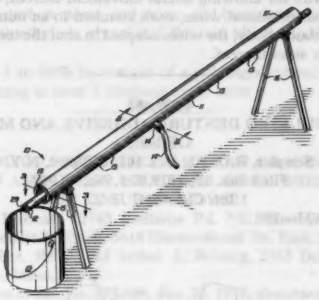
THAWING ASSEMBLY FOR CLOGGED ASPHALT PIPES

Manuel D. Gomez, 935 E. Morning Star, Tempe, Ariz. 85283

Filed Apr. 27, 1979, Ser. No. 33,970

Int. Cl.³ F24J *3/00*

U.S. Cl. 432—225 **5 Claims**



1. A pipe section heating assembly comprising:
an elongated hollow metallic casing having a plurality of apertures arranged along at least a part of its length for extending thereinto,
a fuel consuming heating torch arranged to extend through at least one of said apertures for burning within said casing,
a support assembly for holding said casing in an angular position with a supporting surface for said heating assembly so that one end of said casing is at an elevated position with respect to its other end,
said casing being capable of supporting a pipe section therein along its length,
whereby when said torch is ignited, the heat from the burning gases will heat the pipe section sufficiently to thaw matterial clogging its interior, and
a clamp fastened to said other end of said casing longitudinally thereof and extending beyond its free end for grasping and holding the pipe section therein.

4,239,487

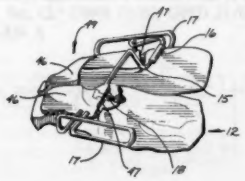
REMOVABLE ORTHODONTIC APPLIANCE

Dwight Murdock, Minneapolis, Minn., assignor to Universal Dynamics, Inc., Minneapolis, Minn.

Filed Jul. 20, 1979, Ser. No. 59,267

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—7 **12 Claims**



1. An orthodontic appliance comprising
(a) a U-shaped plastic body adapted to fit within the mouth adjacent the inner sides of the upper and lower teeth, the closed end being adjacent the front teeth and being separated at the approximate midpoint to divide the plastic body into slightly spaced apart matching halves;
(b) means disposed across the separation of the closed end of

the plastic body for connecting the two halves and allowing each half to be moved apart laterally;

(c) a palatal wire connected across the sides of the plastic body and adapted to extend into the palatal area and towards the rear of the mouth, the wire being separated at its approximate midpoint;

(d) means for slideably connecting the free ends of the palatal wire for allowing lateral movement thereof; and

(e) a pair of buccal wires, each attached to an outer side of the plastic body, the wires adapted to abut the teeth on the outer sides thereof.

4,239,488

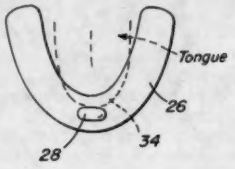
ENCAPSULATED DENTURE ADHESIVE AND METHOD OF USE

Vance A. Sempler, R.D. #1, Box 101, Millport, N.Y. 14864

Filed Jun. 15, 1979, Ser. No. 48,998

Int. Cl.[3] A61C *13/22*

U.S. Cl. 433—180 **8 Claims**



1. A denture adhesive capsule for bonding a denture plate in the oral cavity of a wearer comprising a capsule shell and a denture adhesive contained hermetically within the shell, the adhesive being releasable from the capsule when the capsule is inserted in the oral cavity of the wearer and compressed thereon by the denture plate, the capsule shell being a composition which undergoes liquefaction at a temperature at or slightly below normal human body temperature, whereby said compression causes the adhesive to form a bonding layer between the denture plate and the oral cavity.

4,239,489

DENTAL THREADED TAPERED POST WITH VENT

Alan G. Ellman, 1 Auerbach La., Lawrence, N.Y. 11516, and Jon C. Garito, 22 Deering La., East Rockaway, N.Y. 11558

Filed Feb. 5, 1979, Ser. No. 9,514

Int. Cl.[3] A61C *13/08*

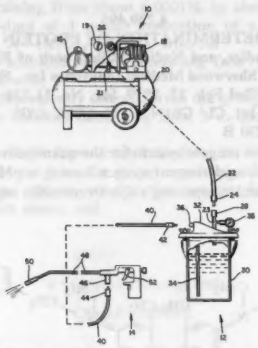
U.S. Cl. 433—220 **10 Claims**

1. A dental post for mounting in a tooth root canal, comprising an elongated metal member having on its exterior along substantially its entire length a fine helical thread, said metal member being constituted of a tapered lower part extending along substantially one-half to three-quarters of its full length and coaxial therewith a cylindrical upper part, said metal member having a vent extending along its full length, a head element having an internal threaded hole in threaded engagement with the upper part of said metal member, and means on the head element for receiving screw driving means for screwing the post into the root canal.

4,239,490
CARPET DYEING SYSTEM

David Kelly, Dalton, Ga.; Michael Vidal, Lakeworth, Fla., and Saul Rosenthal, Dalton, Ga., assignors to Professional Chemical & Color, Inc., Dalton, Ga.

Filed Mar. 16, 1979, Ser. No. 21,223
Int. Cl.[3] D06P *00/00, 1/38*
U.S. Cl. 8—499 3 Claims



1. A method of dyeing a tufted nylon pile carpet on location comprising the sequential steps of:

spraying an aqueous solution of a dye liquor downwardly into upwardly extending nylon pile of the carpet, said dye liquor being at a temperature between approximately 60° F. and 212° F., said dye liquor being sprayed from an airless sprayer having a nozzle, said dye liquor being sprayed from said nozzle at a pressure of between approximately 40 and 45 pounds per square inch and said nozzle being approximately eight inches from said pile to provide uniform penetration of said dye liquor into said pile and to avoid overwetting of said carpet;

said dye liquor being selected from the group consisting of:

an aqueous solution of an acid dye having one or more sulphonic acid reactive groups;

an aqueous solution of an acid premetallized dye having one or more sulphonic acid reactive groups; and

an aqueous solution of a direct dye having one or more sulphonic acid reactive groups; and

brushing the pile of the carpet to assure sufficient penetration and uniform application of said dye liquor into said nylon pile.

4,239,491
DYEING AND PRINTING OF TEXTILES WITH DISPERSE DYES

Ulrich Baumgarte, Limburgerhof; Knut Oppenlaender, Ludwigshafen; Harald Schlueter, Weisenheim; Harro Petersen, Frankenthal; Norbert Greif, Bobenheim, and Rainer Strickler, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 103,074
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855188
Int. Cl.[3] D06P *3/82;* C09B *67/00*
U.S. Cl. 8—532 4 Claims

1. An improved process for dyeing or printing water-swellable cellulosic fibers and mixtures of said cellulosic fibers with synthetic fibers by contacting the fibers throughout with a dye liquor or print paste which contains, as essential ingredients, water in an amount sufficient to swell the cellulosic fibers, a water-insoluble disperse dye and a water-soluble solvent which maintains swelling of the cellulose if water is removed and which is a solvent for the disperse dye, and heating the contacted fibers to effect fixation of the dye, the improvement comprising using as water-soluble solvent a mixture of

(a) 99 to 1% by weight of a compound selected from the group consisting of polyethylene glycol having a molecular weight of from 300 to 5,000, block copolymers of ethylene oxide and propylene oxide containing from 10 to 100 propylene oxide units and 8 to 300 ethylene oxide units, monoethers, diethers or esters of carboxylic acids of 2 to 20 carbon atoms, and mono- and biscarbamates of the said polyethylene glycol and the said block copolymers, and

(b) from 1 to 99% by weight of a polyoxyalkylated amine containing at least 3 ethylene oxide units.

4,239,492
METHOD OF PREPARING VASCULAR GRAFTS OF HUMAN AND OTHER UMBILICAL CORD ORIGINS FOR TISSUE INGROWTH

Daniel G. Holman, 12743 Radisson Rd. NE., Blaine, Minn. 55434; Robert A. Ersek, 5416 Diamondhead Dr. East, Bay St. Louis, Miss. 39520, and Arthur A. Beisang, 2263 Dellwood, Roseville, Minn. 55113

Continuation of Ser. No. 872,606, Jan. 26, 1978, abandoned. This application Jun. 14, 1979, Ser. No. 48,381
Int. Cl.[3] C14C *1/00*
U.S. Cl. 8—94.11 3 Claims

1. The method of preparing an umbilical cord for implantation in a human body which method comprises the steps of:

(a) roughening the outer surface of the cord prior to implantation, with the individual abrasions of the cord extending through the outer membrane of said cord, thus having a rough and textured surface area containing small hair-like projections;

(b) flushing the cord and thereafter mounting the cord upon a mandrel of the desired configuration;

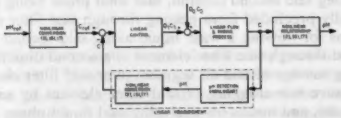
(c) immersing the mounted cord and mandrel into an aqueous solution of ethyl alcohol containing more than about 70% of ethyl alcohol; and

(d) thereafter immersing the mounted cord in an aqueous solution of aldehyde selected from the group consisting of dialdehyde starch and/or gluteraldehyde containing more than about 1% of said aldehyde in water for a period sufficiently long to permit the configuration to become fixed.

4,239,493
METHOD AND APPARATUS FOR CONTROLLING THE PH

Antti J. Niemi, Kauniainen, and Pentti K. Jutila, Helsinki, both of Finland, assignors to Pentti Jutila, Helsinki, Finland, a part interest

Filed Jun. 7, 1978, Ser. No. 913,471
Claims priority, application Finland, Jun. 7, 1977, 771810
Int. Cl.[3] G05B *13/02;* G05D *21/02*
U.S. Cl. 23—230 A 5 Claims



1. In a method for controlling pH in a continuous flow vessel which is entered by a process material through a feed channel and by controlling chemical solution through a control channel and in which the pH is measured at the output part of the vessel in order to effect the control by controlling the feed of the control chemical by the feedback method, the value of a reference variable being given and expressed by a pH number, a combination of steps which comprises:

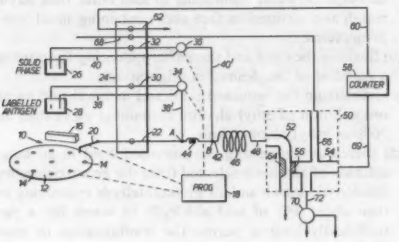
(a) transforming the result of the pH measurement to the hydrogen ion concentration,
(b) transforming likewise the reference value given as a pH number to the corresponding hydrogen ion concentration,
(c) determining, by means of an equation describing dissociation equilibria in the solution, a final feedback quantity which is a function of the concentration quantity in step (a),
(d) determining, by means of said equation, a final reference value which is a function of the concentration quantity in step (b),
(e) forming a control deviation as the difference of the final reference value in step (d) and of the final feedback quantity in step (c), and
(f) controlling the feed of the controlling chemical on the basis of said control deviation, typically using a linear controller and an actuator controlled thereby.

4,239,494

PHASE SEPARATOR FOR CONTINUOUS-FLOW ANALYTICAL SYSTEMS

John A. Clements, Wallington, England, assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 23, 1978, Ser. No. 954,000
Claims priority, application United Kingdom, Oct. 25, 1977, 44420/77
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 R **12 Claims**



1. A continuous-flow analytical system, comprising:
a first conduit for passing successive liquid samples each containing, at least, a solid phase and liquid phase, said liquid samples being separated, at least, by an occluding air segment,
a second conduit communicating with said first conduit across a filter element;
means for positively pumping at least a portion of said liquid phase through said filter element in a first direction and along said second conduit, said solid phase being substantially precluded from passing through said filter element,
means for flowing a wash liquid along said second conduit and through said filter element in a second direction during passage of said air segment over said filter element to ensure non-clogging of said filter element by said solid phase, and means for analyzing said liquid phase.

10. In a method of continuous-flow analysis of successive liquid samples, each separated by, at least, an occluding air segment, which comprises forming a reaction mixture of each sample with, at least a solid phase particulate reactant, and pumping said reaction mixture along a first conduit, the improvement which comprises providing a second conduit communicating with said first conduit across a filter element, periodically positively pumping at least a portion of the liquid from the first conduit through said filter element into said second conduit, the solid phase being prevented from entering the second conduit by said filter element; subjecting said liquid portion to analysis, and periodically flowing a wash liquid from said second conduit through said filter element into said first conduit, said flow of wash liquid being controlled to occur when an air segment is in contact with said filter element to prevent clogging of the filter element by the solid phase.

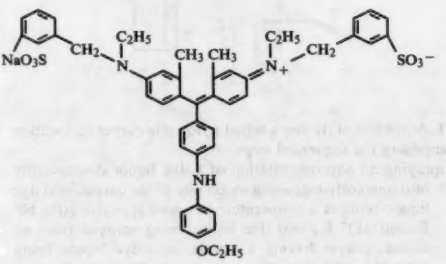
4,239,495

DETERMINATION OF PROTEIN

E. Melvin Gindler, and Nadine Miller, both of Rockford, Ill., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Feb. 12, 1979, Ser. No. 11,226
Int. Cl.[3] G01N *33/16*; C09K *3/00*
U.S. Cl. 23—230 B **14 Claims**

1. An aqueous reagent system for the quantitative determination of protein, said reagent system having a pH of between about 0 and 1 and comprising a dye structurally represented as:



a monobasic strong acid having a pK_a of less than 3, a polybasic phosphonic acid, and a water soluble, nonionic surfactant characterized as being a block copolymer containing terminal polyethylene oxide segments separated by a polypropylene oxide segment, said ingredients being present in an amount such that said system exhibits substantially the same reactivity to different proteins and, when mixed with a protein containing sample, forms a stable colored protein dye complex which follows Beer's law.

4,239,496

GAS CYCLE FLUID ENERGY PROCESS FOR FORMING COAL-IN-OIL MIXTURES

Joseph W. Cochran, Clearwater, Fla., assignor to ComCo, Pittsburgh, Pa.

Filed Dec. 6, 1978, Ser. No. 966,780
Int. Cl.[3] C10L *1/32*
U.S. Cl. 44—51 **6 Claims**

1. In a process for forming coal-oil mixtures for combustion comprising the steps of:
(a) pulverizing moisture-containing coal in a fluid energy pulverizer by use at a substantially dry noncombustible gas stream, introduced thereto at an elevated temperature and pressure;
(b) evacuating the pulverized coal from said pulverizer in the noncombustible gas stream,
(c) then separating the pulverized coal from the noncombustible gas stream; and
(d) then mixing the pulverized coal with oil, wherein the improvement comprises the additional steps of:
(e) heating a stream of air by bringing said stream into heat exchange relation with the noncombustible gas stream after the pulverized coal has been removed from said gas stream; and then
(f) drying the moisture containing coal with said heated stream of air before said coal is pulverized.

4,239,497

ADDITIVES FOR HYDROCARBON OILS

Gary W. Y. Kwong, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 8, 1979, Ser. No. 92,385
Int. Cl.³ C10L 1/18, 1/22
U.S. Cl. 44—72 13 Claims

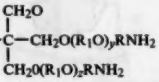
1. A composition comprising a major amount of a hydrocarbon oil containing from about 0.0001% to about 1% of the reaction product of 1 molar proportion of a poly(oxyalkylene)amine, $A—(R_1O)_n—RNH_2$, wherein

a. R is an alkylene moiety containing from 2 to about 10 carbon atoms;

b. R_1 is independently selected from the group consisting of alkylene moieties containing from 2 to about 10 carbon atoms;

c. n is an integer from about 2 to about 50;

d. A is selected from the group consisting of H_2N, alkoxy, where the carbonaceous portion contains from 1 to about 40 carbon atoms, and



wherein B is selected from the group consisting of hydrogen and alkyl containing from about 1 to about 10 carbon atoms, and y, z, are integers from 1 to about 10;

with about 0.5 to about 2.0 molar proportion of an epihalohydrin selected from the group consisting of epihalohydrin, 1-halo-3,4-epoxybutane, 1-halo-2,3-epoxybutane, 1-halo-4,5-epoxypentane and 1-halo-3,4-epoxypentane, at a temperature from about 40° C. to about 150° C. in the presence of an inorganic base.

4,239,498

METHOD OF PREPARING THYMIC FACTORS AND COMPOSITION

Allyn H. Rule, 43 Grove Hill Ave., Newtonville, Mass. 02160

Filed Nov. 27, 1978, Ser. No. 963,676
Int. Cl.³ A61K 39/00, 35/12, 37/00; C07G 7/00
U.S. Cl. 424—88 24 Claims

1. A process for recovering fractions having immunological properties, the steps which comprise:

collecting thymus glands of neo-natal vertebrates aseptically upon slaughter and removing fat and connective tissue;

comminuting said glands in a cold aqueous solution;

removing fat and cellular debris produced during the comminution and recovering a solution;

heating said solution to between 60° and 85° C. whereby the solution is sterilized and proteins are precipitated;

rapidly chilling the solution to less than about 4° C., removing the precipitate and recovering the solution;

precipitating sub-cellular material and recovering the solution;

admixing the solution with a water miscible organic nonpolar solvent to form a mixture with between about 10 and 50% by volume solvent and the balance solution, whereby a precipitate will form, and recovering the precipitate which contains an immunological suppressor factor.

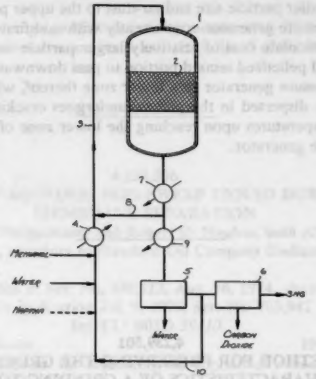
4,239,499

PRODUCTION OF A FUEL GAS AND SYNTHETIC NATURAL GAS FROM METHANOL

William C. Pfefferle, Middletown, N.J., assignor to Engelhard Minerals and Chemicals Corporation, Iselin, N.J.

Continuation of Ser. No. 599,863, Jul. 28, 1975, abandoned. This application Nov. 15, 1977, Ser. No. 851,661
Int. Cl.³ C01B 2/14
U.S. Cl. 48—197 R 10 Claims

1. A single-stage catalytic process for making a fuel gas, said process comprising passing a gaseous feed comprised of methanol and steam, in a reactor, over a catalyst comprised of Group VIII metal on a support at a pressure in the range of from about 800 psig to about 2500 psig and a temperature in the range of from about 350° C. to about 500° C., maintaining said gaseous



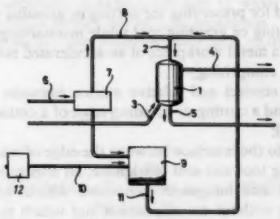
feed in a completely vaporized state while passing said gaseous feed through said reactor whereby said gaseous feed is reformed entirely in the vapor phase to a gaseous product mixture containing at least about 90% methane by volume on a dry carbon dioxide-free basis.

4,239,500

PROCESS FOR THE UTILIZATION OF WASTE PRODUCT TAR-DUST IN GASIFICATION OF GRANULAR FUEL UNDER PRESSURE, ESPECIALLY OF BITUMINOUS COAL

Wolfgang Ratzeburg, Essen, Fed. Rep. of Germany, assignor to Steag A.G., Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 852,146, Nov. 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 720,254, Sep. 3, 1976, abandoned. This application Mar. 14, 1979, Ser. No. 20,335
Int. Cl.³ C10J 3/16
U.S. Cl. 48—202 3 Claims



1. In the process of gasifying coal be feeding particulate coal and steam into a pressure generator for interreaction therein to produce a gas effluent containing tar-dust, and recycling the tar-dust produced thereby, the improvement comprising:

(a) feeding said coal into a separator, thereby producing a first portion of relatively large particle size and at least a second portion of relatively small particle size,

(b) feeding steam and said first portion of relatively larger particle size into said generator to crack the coal particles and produce effluent gas from the generator containing tar-dust as a waste product,

(c) recovering said tar-dust from said effluent gas and admixing said tar-dust with said second portion of particulate

coal feed of relatively smaller particle size to bind the latter into pellets of sufficient weight whereby they are capable of being conveyed to a lower zone of said pressure generator, and

(d) feeding said pelletized second portion of relatively smaller particle size and tar-dust to the upper portion said pressure generator concurrently with said first portion of particulate coal of relatively larger particle size, causing said pelletized second portion to pass downwardly in said pressure generator to a lower zone thereof, whereby the tar, dispersed in the pellets, undergoes cracking at high temperatures upon reaching the lower zone of said pressure generator.

4,239,501

METHOD FOR PRESERVING THE GRINDING CHARACTERISTICS OF A GRINDING TOOL

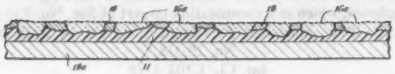
John C. J. Wirth, 98 Ponus Ave., Norwalk, Conn. 06850

Continuation of Ser. No. 739,355, Nov. 5, 1976, Pat. No. 4,095,961, which is a continuation of Ser. No. 548,107, Feb. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 191,844, Oct. 26, 1971, abandoned, and Ser. No. 501,093, Aug. 27, 1974, abandoned, said Ser. No. 191,844, and Ser. No. 501,093, each is a continuation-in-part of Ser. No. 166,093, Jul. 26, 1971, Pat. No. 3,833,346. This application Mar. 7, 1978, Ser. No. 884,267

The portion of the term of this patent subsequent to Jun. 20, 1995, has been disclaimed.

Int. Cl.³ B24B *17/00*; C08G *51/12*

U.S. Cl. 51—281 R **8 Claims**



1. Method for preserving the cutting or grinding characteristics of a cutting or grinding tool while maintaining the surface integrity of a metal workpiece at an accelerated rate of cutting or grinding comprising;

effecting contact and relative motion between said workpiece and a cutting or grinding edge of a cutting or grinding tool;

applying to the interface between the edge of said cutting or grinding tool and said workpiece, an effective amount of at least one inorganic compound which will undergo melting without decomposition and which is neither explosive nor flammable upon exposure to the frictional heat generated at said interface during periods of such contact and relative motion, said compound being free of sulfur and/or halogen, stable under conditions of use, and having a reversible solid—liquid phase transition in the range of 70° F. to 1000° F., a decomposition temperature of at least 100° F. above the melting temperature and a latent heat of melting greater than 10 cal/gm.;

whereby, said compound, upon exposure to said frictional heat, undergoes melting and reduces the surface temperature generated at said interface by the heat absorption due to heating said compound to the melting point, the latent heat of melting of said compound and the additional heat absorption of the molten compound, while simultaneously forming a lubricating liquid film at said interface.

4,239,502

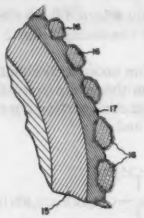
DIAMOND AND CUBIC BORON NITRIDE GRINDING WHEELS WITH IMPROVED SILVER ALLOY BONDS

Glen A. Slack, Scotia, and Warren S. Knapp, Amersterdam, both of N.Y., assignors to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 773,095, Feb. 28, 1977, abandoned, and a continuation-in-part of Ser. No. 645,786, Dec. 31, 1975, abandoned. This application Nov. 17, 1978, Ser. No. 961,722

Int. Cl.³ E21B *9/36*; B23K *1/20*

U.S. Cl. 51—295 **2 Claims**



1. A grinding wheel comprising a plurality of particles selected from the group consisting of diamond and CBN, a rim portion having coefficient of thermal expansion substantially matching the coefficient of thermal expansion of said body and being made of a metal selected from the group consisting of molybdenum and tungsten, said particles being distributed over the surface of said rim portion and bonded thereto with a silver-base alloy bonding layer consisting essentially in atom percent of 0.1 to 15 percent manganese, 0.1 to 5 percent zirconium, and the balance silver, said alloy bonded chemically to said body.

4,239,503

SOFT ACTING PHENOL-FORMALDEHYDE RESIN BONDED GRINDING WHEEL

Denis I. Harris, Upper Nazeing, and Luke Staples, St. Albans, both of England, assignors to Norton Company, Worcester, Mass.

Filed May 21, 1976, Ser. No. 688,532

Claims priority, application United Kingdom, Aug. 4, 1975, 32479/75

Int. Cl.³ C08J *5/14*

U.S. Cl. 51—298 **8 Claims**

1. A bonded abrasive product comprising abrasive grain and a thermoset polymeric bond, wherein the improvement comprises:

A thermoset polymeric bond based on the reaction product of a phenol and an aldehyde in a molar ratio of said phenol to said aldehyde of greater than 1, and wherein said reaction product is cured by a methylene group donor, said donor being present in sufficient quantity so as to provide from 0.3 to less than 1.2% by weight of methylene groups, based on the weight of said methylene group donor and said reaction product of said phenol and said aldehyde.

4,239,504

FREE BASE AMINO ALCOHOLS AS ELECTROSTATIC PRECIPITATOR EFFICIENCY ENHANCERS

David M. Polizzotti, Yardley, and Joe C. Steelhammer, Lansdale, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 29,414, Apr. 12, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 140,287

Int. Cl.³ B03C *1/00*

U.S. Cl. 55—5 **20 Claims**

1. In an electrostatic precipitator, a method for removing particles from a particle-laden gas stream which method com-

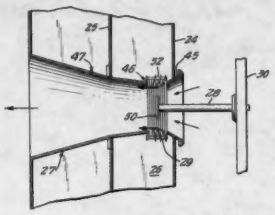
prises electrically charging the particles by passing the gas stream through an ionization field and attracting the thus-charged particles to a grounded collecting electrode for collection, the improvement comprising: prior to collection of the particles distributing across the gas stream within the ionization field from about 1 to 200 parts of effective free base amino alcohol additive per million parts of gas to enhance the efficiency of particle removal.

4,239,505

PURGE GAS CONDITIONING OF HIGH INTENSITY IONIZATION SYSTEM FOR PARTICLE REMOVAL

Raymond F. Drnevich, Clarence Center, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 7, 1979, Ser. No. 73,297
Int. Cl.³ B03C 3/80
U.S. Cl. 55—12 **6 Claims**



1. In a method for removing high resistivity particles from a feed gas stream in which the particles entrained in said feed gas streams are electrostatically charged by passage through a flow-restricted high intensity corona discharge throat-shaped region between an annular outer wall as a corona collecting anode and a discharge cathode closely spaced from and surrounded by said outer wall, purge gas is introduced through a multiplicity of conical shaped vanes contiguous to each other and axially spaced in the longitudinal direction of feed gas flow to form restricted openings therebetween in said outer wall and into said throat-spaced region to form a thin film of purge gas flow along said outer wall in substantially the same direction as said feed gas flow and reduce back corona, and the electrostatically charged particles are thereafter separated from the gas stream, the improvement comprising controlling the flow rate of the purge gas to be at least equal to the purge gas flow rate defined by Equation (1) but less than the purge gas flow rate defined by Equation (2) as follows:

$$Q_p \text{ is equal to or greater than } 6VmWs \quad (1)$$

$$Q_p \text{ is equal to or less than } 4CFM/\text{ft} \quad (2)$$

wherein

$$Q_p = Q/C, \text{ and} \quad (3)$$

$$C = N\pi D, \text{ with} \quad (4)$$

Q_p=purge gas flow rate per total restricted openings circumferential length (CFM/ft),
V_m=feed gas flow rate past said discharge cathode (fps),
W_s=average width of restricted openings as measured normal to the direction of feed gas flow (ft),
Q=actual purge flow rate (CFM),
N=the total number of restricted openings in said outer wall, and
D=effective inner diameter of said outer wall (ft);

and controlling the relative moisture saturation of the purge gas such that the minimum level RS_p is in accordance with Equation (5) and the maximum level is below that resulting in condensation on said outer wall as follows:

$$RS_p \text{ is equal to or greater than } 0.00073 \log_{10} \rho_{300°F}/(1.82-0.122 \log_{10} \rho_{300°F}+0.052 \log_{10} RSS_m) \quad (5)$$

where

ρ=the average particle resistivity measured at 300° F. and
RS_m=the relative moisture saturation level of the feed gas stream.

4,239,506

USE OF AQUEOUS, NON-SWEEP LIQUID DURING MEMBRANE SEPARATION

Edward F. Steigelmann, and Robert D. Hughes, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 498,112, Aug. 16, 1974, abandoned.
This application Jul. 9, 1976, Ser. No. 703,942
Int. Cl.³ B01D 59/10
U.S. Cl. 55—16 **19 Claims**

1. In a process for separating an aliphatically-unsaturated hydrocarbon from a fluid mixture comprising

contacting said mixture containing said aliphatically-unsaturated hydrocabon with a first side of an essentially solid, water-insoluble, hydrophilic semi-permeable membrane having therein an aqueous liquid barrier having metal-containing ions which combine with said aliphatically-unsaturated hydrocarbon to form a water-soluble complex,

the partial pressure of said aliphatically-unsaturated hydrocarbon on a second side of the semi-permeable membrane being sufficiently less than the partial pressure of said aliphatically-unsaturated hydrocarbon in said mixture to provide the separated aliphatically-unsaturated hydrocarbon on the second side of the semi-permeable membrane,

removing said separated aliphatically-unsaturated hydrocarbon from the vicinity of the second side of the semi-permeable membrane, the improvement comprising contacting the second side of the semi-permeable membrane with an aqueous, non-sweep liquid medium during said aliphatically-unsaturated hydrocarbon separation in an amount sufficient to reduce the loss of water from said aqueous liquid barrier during said separation.

2. The process of claim 1 wherein said fluid mixture is gaseous.

4,239,507

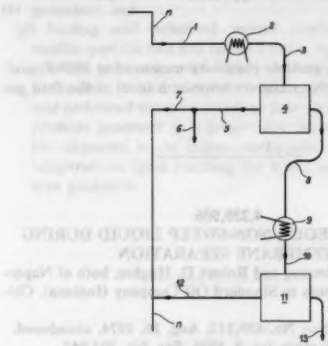
METHOD OF SEPARATION OF A GAS FROM A GAS MIXTURE

Robert Benoit, 3 rue de Moscou, 91300 Massy; Jacques Machefer, 46 rue Vital, 75016 Paris; Jacques Mauvisseau, 45 rue Ribéra, 75016 Paris, and Pierre Plurien, 37 Parc d'Ardenay, 91120 Palaiseau, all of France

Filed Sep. 27, 1978, Ser. No. 946,357
Claims priority, application France, Oct. 6, 1977, 77 30069
Int. Cl.² B01D 59/12
U.S. Cl. 55—16 **5 Claims**

1. A method of separation of a gas from a gas mixture in which said gas is the most readily condensable of the gases of said mixture, wherein said gas mixture is passed in contact with at least one microporous barrier having a permeability of 100×10^{-7} to 1000×10^{-7} moles of air/cm²/min./cmHg, a pore radii of between 10 to 100 Å, the partial pressure of said most readily condensable gas and/or the temperature of said gas mixture is adjusted as a function of the mean pore radius of

said barrier so as to ensure capillary condensation of said condensable gas at the pore inlets of said barrier and to induce a flow of said condensed gas along to pores and across said barrier, and the gas which has thus condensed is then collected.



4,239,508
CUMENE RECOVERY

Steven L. Rock, Doylestown, Pa., and James S. Clovis, Mougins, France, assignors to Rohm and Haas Company, Philadelphia, Pa.

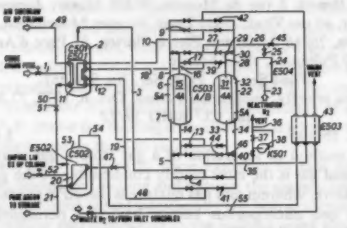
Filed Jun. 5, 1979, Ser. No. 45,714
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—59 **10 Claims**

1. A process for removing cumene vapors from a cumene containing vapor stream comprising the steps of passing said vapor stream through a mass or bed of a substantially dry, hydrophobic, macroreticular, water insoluble, cross-linked polymer consisting essentially of from about 20% to 100% by weight of divinylbenzene, the balance being ethylvinylbenzene or styrene or mixtures thereof but not more than 50% of either ethylvinylbenzene or styrene, until the capacity of the polymer to remove cumene is substantially exhausted, desorbing said cumene from said mass or bed of said polymer by passing steam through said mass or bed and again passing a cumene containing vapor stream through the wet mass or bed of polymer.

4,239,509
METHOD OF PURIFYING CRUDE ARGON

Bernard R. Bligh, Hampton Hill, and Stephen J. Godber, Woking, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 30, 1979, Ser. No. 43,946
Claims priority, application United Kingdom, May 31, 1978, 25890/78
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—66 **6 Claims**

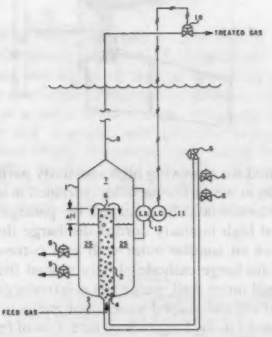


1. A method for purifying crude argon containing argon, oxygen and nitrogen which method comprises the steps of reducing the amount of nitrogen in the crude argon to between a trace and 0.15% (by volume) by passing the crude argon through a first bed of 5 A and/or 13X molecular sieves surrounding and in thermal contact with a second bed of 4 A molecular sieve with a wall separating said 5 A and or 13 X molecular sieve from said 4 A molecular sieve and passing the remaining oxygen and argon, together with residual nitrogen, through said second bed to separate the oxygen and argon, the temperature of the 5 A and or 13 X molecular sieve, crude argon and the remaining oxygen and argon being such that the remaining oxygen and argon passes through a volume of 4A molecular sieve which is wholly maintained at or colder than −250° F.

4,239,510
NATURAL GAS PURIFICATION

George E. Hays, and Charles F. Cook, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 19, 1979, Ser. No. 4,789
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—68 **9 Claims**



1. A method for removing CO_2 from a gas comprising natural gas and CO_2, said method comprising:
introducing sea water as an absorbent into the lower portion of a contacting zone of an absorber which absorber is submerged in sea water, which sea water is the source of said absorbent,
introducing said gas into said contacting zone and into contact with said absorbent,
having the gas and the absorbent flow cocurrently upward through said contacting zone producing CO_2-rich sea water and unabsorbed gas,
accumulating said unabsorbed gas near the top of the absorber,
recovering said unabsorbed gas therefrom, and
discharging said CO_2-rich sea water from the absorber and into the surrounding sea water via discharge means.

4,239,511
PROCESS AND APPARATUS FOR COOLING COKE OVEN GAS

Friedrich-Paul Austermühle, Kaarst, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 14, 1978, Ser. No. 969,338
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—84 **18 Claims**

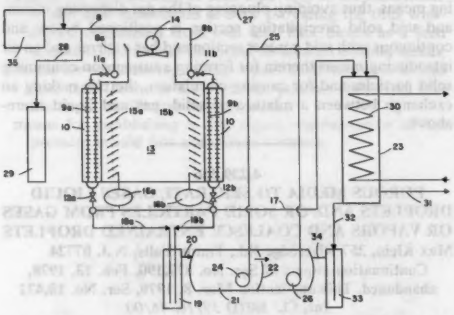
1. A process for cooling process gas containing naphthalene, comprising:
(a) cooling said process gas to a temperature above the dew point of naphthalene by conducting said process gas

through a first heat exchange means wherein air is used as the cooling medium;

(b) conducting said process gas from said first heat exchange means, at said temperature above the dew point of said naphthalene, to a second heat exchange means wherein liquid is used as the cooling medium;

(c) cooling said process gas to a temperature below the dew point of said naphthalene within said second heat exchange means; and

(d) conducting said process gas from said second heat exchange medium,



(e) condensing a portion of the process gas into a liquid condensate within said first heat exchange means;

(f) separating said condensate from said process gas after said process gas is conducted from said first heat exchange means;

(g) conducting said condensate to said second heat exchange means; and

(h) flushing said second heat exchange means with said condensate.

4,239,512

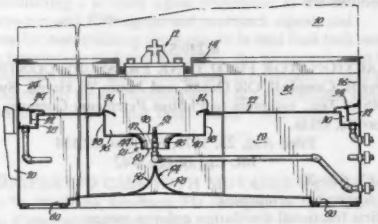
AIR WASHER PARTICULARLY FOR PAINT SPRAY BOOTHS

Frank L. Dobias, Livonia, Mich., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Continuation-in-part of Ser. No. 817,577, Jul. 21, 1977, abandoned. This application Feb. 13, 1978, Ser. No. 877,005

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—90 **10 Claims**



1. A method of removing contaminants from a gas comprising the steps of: generating at least one substantially continuous sheet of washing liquid across the entrance to a streamline flow-passage having a smoothly curved convex interior surface progressively decreasing in cross-sectional area from its entrance to its exit, the sheet of washing liquid emanating from the axis of the streamline flow-passage substantially perpendicular to said axis at the entrance of said flow passage and completely covering the cross-sectional area of the flow-passage adjacent the entrance thereof; simultaneously moving a gas into the entrance of the flow passage and through the sheet of liquid for admixing the gas and the liquid; substantially simultaneously accelerating the gas and washing liquid entrained therein through said flow-passage at continuously accelerating velocity in a substantially laminar unidirectional flow free of discernible turbulence; discharging the gas and washing liquid from said flow-passage and decelerating the gas outwardly of the flow-passage for separating the gas from the liquid and wetted contaminants.

4,239,513

SEPARATION OF PARTICLES FROM GASEOUS FLUID FLOWS

Egbert Paul, Beethoven-Str. 40, 7310 Plochingen, and Karl Reither, Freiheitsstr. 45, 5210 Troisdorf-Spich, both of Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,728

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2731996

Int. Cl.³ B03C *3/01, 3/45, 3/78;* **B01D** *45/16*

U.S. Cl. 55—118 **3 Claims**

1. A separator device for the continuous separation of foreign particulate matter including drops of moisture and dust from a gaseous fluid flow, comprising:

stationary wall means for deflecting said fluid flow and subjecting the same to centrifugal force to separate said particulate matter and collect said particulate matter on or adjacent said stationary wall means, said stationary wall means comprising a plurality of substantially S-shaped and spirally curved laminae which are inserted axially one into another to define a plurality of passages located adjacent and parallel to one another to permit simultaneous fluid flow therethrough, the width of each said passage being substantially smaller than the length thereof, and each of said passages having a part at which the cross-section narrows and another subsequent part at which the cross-section widens in the direction of fluid flow and wherein each of said passages is curved spirally first through 360° in one direction of deflection with increasing curvature and then through 360° in the opposite direction with decreasing curvature, wherein each of said spirally curved laminae comprises first, second, third and fourth semicylindrical portions, wherein said first portion is connected contiguously to said second portion curving in the same direction as said first portion, said second portion having a radius approximately twice that of said first portion, said second portion is connected contiguously to said third portion, said third portion having the same radius as said second portion but curving in the opposite direction, and said third portion is connected contiguously to said fourth portion, said fourth portion curving in the same direction as said third portion and having a radius approximately half that of said third portion; and

spacer means for holding said laminae in defined positions relative to one another.

4,239,514

ELECTROSTATIC PRECIPITATOR WITH PRECIPITATOR ELECTRODES

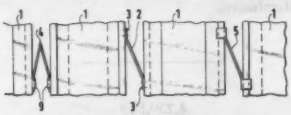
Gerd Junkers, Bad Homburg, Fed. Rep. of Germany, assignor to Saarbergwerke Aktiengesellschaft, Saarbrücken, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,301

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2711858

Int. Cl.³ B03C *3/08, 3/47*

U.S. Cl. 55—145 **17 Claims**



1. An electrostatic precipitator comprising a number of precipitator electrodes; a number of discharge electrodes; and means for supporting said precipitator electrodes in rows adjacent to one another and in pairs opposite each other and said discharge electrodes at equal distances from the precipitator electrodes of the respective pairs, and said support means including spring elements interposed between said precipitator electrodes, each of said spring elements being connected to two adjacent precipitator electrodes of the same row.

4,239,515

GAS-LIQUID CONTACT REACTION APPARATUS

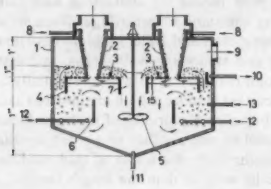
Hiroshi Yanagioka, Yokohama; Atsushi Futami, Tokyo; Masatake Shinsenji, and Minoru Tanaka, both of Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 823,463, Aug. 10, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 9,504

Claims priority, application Japan, Aug. 10, 1976, 51-94540

Int. Cl.³ B01D *47/02*

U.S. Cl. 55—223 **5 Claims**



1. Gas-liquid contact reaction apparatus comprising a vessel having a liquid therein, said vessel being provided with funnel-shaped gas introducing means extending from the top of the vessel downwardly to a substantially central portion of the vessel, said gas introducing means having at its lower open end a flared skirt-like perforated gas dispersing means and a non-perforated side wall member disposed around the lower end periphery of said gas dispersing means, said gas dispersing means being disposed completely below the liquid level and adapted to form above the same a froth layer of a mixture of a solid, liquid and gas, whereby when gas is introduced into the vessel there is formed in the vessel a splash separating section above said froth layer of a solid, liquid and gas mixture, an intermediate solid-gas-liquid contact section including said froth layer, and a lower solid precipitating section below said froth layer, said splash separating section including means comprising a space for separating gas from a splash liquid and a gas outlet for allowing gas to flow from said space, said solid-gas-liquid contact section including means positioned below and contiguous with said splash separating section comprising a lower end portion of said gas introducing means introducing the gas into the end portion for dispersing the gas through said skirt-like perforated gas dispersing means, for preventing the gas from escaping by the side wall member and for compressing the liquid beneath said gas dispersing means, such that the level of the liquid beneath the gas dispersing means is lower than the level of the liquid in said solid-gas-liquid contact section and wherein a space is formed between said gas dispersing means and the level of the liquid below the gas dispersing means, said gas dispersing means being positioned with respect to said gas introducing means such that the gas is forced to bubble up through the gas dispersing means to rise through the liquid in the solid-gas-liquid contact section and wherein the solids are introduced into the end portion together with the gas through the open bottom below said gas dispersing means, thus avoiding plugging of the gas dispersing means, and said solid precipitating section is positioned below and contiguous with said contact section and has a stirrer and an air introducing means therein for forming a suspension containing solid particles and for causing circulation, thereby making an exchange between a mixture of solid, gas and liquid thereabove.

4,239,516

POROUS MEDIA TO SEPARATE GASES LIQUID DROPLETS AND/OR SOLID PARTICLES FROM GASES OR VAPORS AND COALESCE ENTRAINED DROPLETS

Max Klein, 257 Riveredge Rd., Tinton Falls, N.J. 07724

Continuation-in-part of Ser. No. 877,190, Feb. 13, 1978, abandoned. This application Mar. 8, 1979, Ser. No. 18,472

Int. Cl.³ B01D *39/16, 46/00*

U.S. Cl. 55—389 **15 Claims**

1. A gas-vapor treating mat which comprises (a) glass fibers, of about 6.3 millimeters long and below a length at which they are prone to roping and from about 3 to about 12 microns in diameter, intermixed in the range of from about 4 to about 45 parts with (b) from about 5 to about 50 parts of micro-bits of any of an expanded, thermoplastic styrene-polymer, an expanded lower polyolefin selected from polyethylene to polymethylpentene, and a flexible foamed polyurethane, each said polymer being non-brittle in its initial expanded form; said intermixed glass fibers and polymer micro-bits being held together in sheet or elongated web form and permeable to any of a gaseous and vaporous fluid stream by (c) a binding agent distributed throughout the intermixture of the glass fibers and micro-bits in an amount and manner sufficient to hold them together in the herein noted form and without destroying their permeability, which agent is selected from (i) a compatible organic binder insoluble in cold water and soluble in hot water and inert to the glass fibers, the micro-bits and any other mat constituent as well as to any gas or vapor or entrained droplets or aerosols and fine particles that are to contact the mat and (ii) a cobeat of cotton fibers and any of the micro-bits; whereby the mat has tensile strength from about 0.2 to about 5.3 kilograms per centimeter.

4,239,517

FRACTIONATOR FEED TANK PRESSURE CONTROL

Grover R. Campbell, Old Ocean, and James W. Hobbs, Sweeny, both of Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 23, 1979, Ser. No. 69,154

Int. Cl.³ B01D *3/42*

U.S. Cl. 62—37 **9 Claims**

1. Apparatus comprising:

a first fractional distillation column means;

means for passing a feed stream into said first fractional distillation column means;

first condensing means;

first accumulator means;

means for withdrawing an overhead vapor stream from an upper portion of said first fractional distillation column means and for passing said overhead vapor stream

through said first condensing means to said first accumulator means;

a second condensing means;

a feed tank means;

means for withdrawing at least a portion of the vapor from said first accumulator means and for passing the thus withdrawn vapor from said first accumulator means through said second condensing means to produce condensate which is passed to said feed tank means;

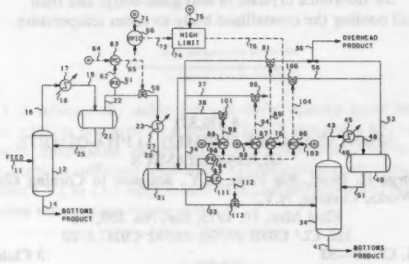
a first control valve means operably located in said means for withdrawing at least a portion of the vapor from said first accumulator means so as to control the flow rate of vapor from said first accumulator means;

a second fractional distillation column means;

means for withdrawing at least a portion of the condensate in said feed tank means and for providing the thus withdrawn condensate from said feed tank means as a feed stream to said second fractional distillation column means;

means for withdrawing at least a portion of the vapor in said feed tank means as an overhead product from said first fractional distillation column means;

means for establishing a first signal representative of the pressure in said first accumulator means;



means for establishing a second signal representative of the desired pressure in said first accumulator means;

means for establishing, responsive to said first signal and said second signal, a third signal responsive to the difference between said first signal and said second signal;

means for manipulating said first control valve means in response to said third signal to thereby maintain a desired pressure in said first accumulator means;

means for establishing a fourth signal representative of a desired valve position for said first control valve means;

means for establishing, responsive to said third signal and said fourth signal, a fifth signal responsive to the difference between said third signal and said fourth signal;

means for establishing a sixth signal representative of the pressure in said feed tank means;

means, responsive to said fifth signal and said sixth signal, for establishing a seventh signal responsive to the difference between said fifth signal and said sixth signal; and

means for manipulating the pressure in said feed tank means in response to said seventh signal, the pressure in said first overhead accumulator means and the pressure in said feed tank means being manipulated so as to maintain a desired valve position for said first control valve means.

4,239,518

REFRIGERATED CASE WITH MOVABLE FAN PANEL

Melvin W. Steelman, Leesburg, Fla., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Filed Jun. 12, 1979, Ser. No. 47,869

Int. Cl.[3] F25D *19/00, 21/10*

U.S. Cl. 62—449 **15 Claims**

1. A refrigerated case, comprising:

an outer cabinet;

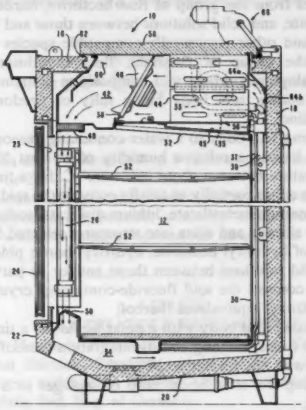
an inner cabinet spaced from said outer cabinet;

air flow duct means for conveying a flowing airstream around at least a substantial portion of the exterior of the inner cabinet;

a plenum chamber between said inner and outer cabinets communicating with said duct means, said plenum chamber having a closable opening for communicating said plenum chamber with the ambient atmosphere;

closure means mounted to said case and moveable between at least closed and open positions with respect to said closable opening for closing said plenum chamber from and opening said plenum chamber to communication with the ambient atmosphere;

air circulating and cooling means mounted to said closure means, such that, in the closed position of said closure



means, said air circulating and cooling means are disposed in said plenum chamber for drawing air through said cooling means and propelling said cooled air through said duct means around said inner cabinet, and, in the open position of said closure means, said air circulating and cooling means are exposed to the ambient atmosphere; and

baffle means coupled with said closure means for closing off said duct means from communication with said plenum chamber when said closure means is in said open position and for opening communication between said plenum chamber and said duct means when said closure means is in said closed position.

4,239,519

INORGANIC GELS AND CERAMIC PAPERS, FILMS, FIBERS, BOARDS, AND COATINGS MADE THEREFROM

George H. Beall, Big Flats; David G. Grossman, Corning; Syed N. Hoda, Horseheads, and Karen R. Kubinski, Elmira Heights, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,907

Int. Cl.[3] C03B *37/075, 37/025, 32/00, 27/02*

U.S. Cl. 65—2 **248 Claims**

1. A method for preparing inorganic films and fibers containing crystals consisting essentially of an exchanged lithium and/or sodium water-swelling mica selected from the group of fluorhectorite, hydroxyl hectorite, boron fluorphlogopite, hydroxyl boron phlogopite, and solid solutions among those and between those and other structurally-compatible species selected from the group of talc, fluortalc, polylithionite, fluorpolylithionite, phlogopite, and fluorphlogopite, which consists in the steps of:

(a) melting a batch for a glass consisting essentially, expressed in weight percent on the oxide basis, of 0-9%

Li_2O and/or 2–10% Na_2O, 2–14% Li_2O+Na_2O, 0–20% B_2O_3, 0–10% Al_2O_3, 15–38% MgO, 50–70% SiO_2, and 0–12% F;

(b) simultaneously cooling said melt to a temperature between about 900°–1050° C. to shape the melt into a body to cause phase separation and nucleation to take place therein;

(c) further cooling said body to a temperature between about 700°–900° C. and maintaining that temperature for a time sufficient to effect the development of crystals therein selected from the group of magnesium metasilicate, lithium disilicate, sodium magnesium silicate, and silica, where said composition is essentially free from fluoride, and/or of a lithium and/or sodium water-swelling mica selected from the group of fluorhectorite, boron fluorphlogopite, and solid solutions between those and between those and other structurally-compatible species selected from the group of fluortalc, fluorpolylithionite, and fluorphlogopite, where said composition contains significant fluoride, said body being fully or predominantly crystalline;

(d) exposing said body to a water-containing gaseous atmosphere having a relative humidity of at least 50% at a temperature between about 200°–400° C. for a time sufficient to either partially or totally convert the said crystals of magnesium metasilicate, lithium disilicate, sodium magnesium silicate, and silica into structures selected from the group of hydroxyl hectorite, hydroxyl boron phlogopite, and solid solutions between those and/or to partially or totally convert the said fluoride-containing crystals into the hydroxyl equivalents thereof;

(e) contacting said body with a polar liquid for a time sufficient to cause swelling and disintegration thereof accompanied with the formation of a gel;

(f) adjusting the solid:liquid ratio of said gel to a desired fluidity;

(g) preparing a fiber or film of said gel;

(h) contacting said fiber or film with a source of large cations for a time sufficient to cause an ion exchange reaction to occur between said large cations and the Li^+ and/or Na^+ ions from the interlayer of said crystals; and then

(i) drying said fiber or film.

19. A method according to claim **1** wherein said fiber or film is prepared by contacting said gel having the desired fluidity with a flocculating agent to form a skin or membrane at the interface therebetween and thereafter drawing off said skin or membrane to renew the contact between said gel and flocculating agent.

23. A method for forming a fiber according to claim **19** wherein said contact between said gel and flocculating agent is made by injecting said gel as a thin stream into a flocculating agent-containing liquid and, thereafter, pulling a continuous fiber or group of fibers from said liquid.

4,239,520
SPONTANEOUSLY FORMED MACHINABLE GLASS-CERAMICS

David G. Grossman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

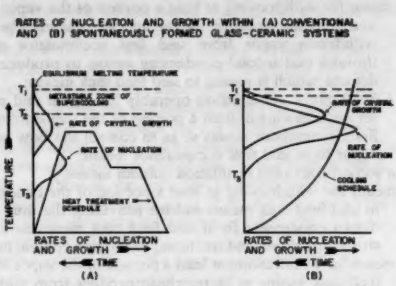
Filed Mar. 19, 1975, Ser. No. 559,787
Int. Cl.[3] **C03B** *27/00, 32/00;* **C03C** *3/22*
U.S. Cl. 65—33 **3 Claims**

1. A method for making a highly crystalline glass-ceramic article exhibiting good machinability characteristics consisting essentially of fluormica crystals dispersed within a glassy matrix, said crystals constituting at least 50% by volume of said article, which comprises the steps of:

(a) melting a batch for a glass consisting essentially, by weight on the oxide basis as calculated from the batch, of about 6–11% K_2O, 1.7–4% Li_2O, 17–25% MgO, 50–65% SiO_2, and 5–8.5% F.;

(b) simultaneously cooling said melt to a temperature about 800°–1000° C. and shaping a glass body therefrom at a rate between about 10°–1000° C./minute to obtain phase separation and nucleation therein;

(c) further cooling said shaped glass body and exposing said



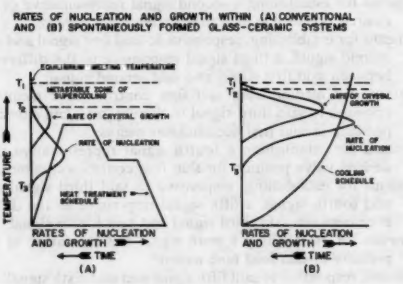
glass body to a temperature between about 600°–850° C. for a sufficient length of time to cause crystallization of the fluormica crystals in said glass body; and then

(d) cooling the crystallized body to room temperature.

4,239,521
SPONTANEOUSLY-FORMED ALPHA-QUARTZ GLASS-CERAMICS

George H. Beall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,786
Int. Cl.[3] **C03B** *27/00, 32/00;* **C03C** *3/22*
U.S. Cl. 65—33 **3 Claims**



1. A method for making a highly crystalline glass-ceramic article consisting essentially of alpha-quartz solid solution and rutile crystals homogeneously dispersed within a glassy matrix, said crystals constituting at least 50% by volume of said article, which comprises the steps of:

(a) melting a batch for a glass consisting essentially, by weight on the oxide basis, of about 2.5–6% Li_2O, 5–11% Al_2O_3, 1.5–7.5% B_2O_3, 60–75% SiO_2, and 6–13% TiO_2;

(b) simultaneously cooling said melt at a rate between about 10°–1000° C./minute to a temperature about 900°–1050° C. to shape said melt into a glass body and secure phase separation and nucleation therein;

(c) further cooling said shaped glass body and exposing said glass body to a temperature between about 650°–900° C., for a sufficient length of time to cause crystallization of the alpha-quartz solid solution and rutile crystals in said glass body; and then

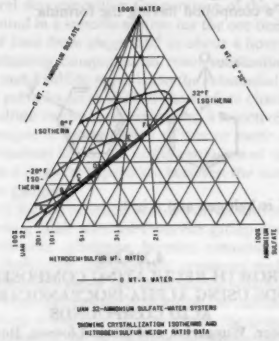
(d) cooling the crystallized body to room temperature.

4,239,522

FERTILIZER SOLUTIONS CONTAINING SULFUR AND HAVING LOW CRYSTALLIZATION TEMPERATURE

Joseph F. Wilson; Lawrence M. Fodor, and Joseph R. Kenton, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 13, 1979, Ser. No. 48,102
Int. Cl.³ C05C *1/00, 9/00, 3/00*
U.S. Cl. 71—29 22 Claims



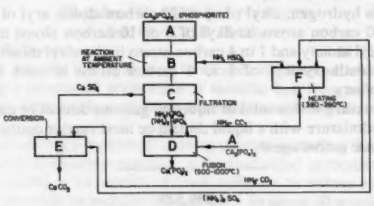
1. A substantially stable nitrogen sulfur aqueous liquid fertilizer solution prepared by a process which comprises admixing water, ammonium nitrate, urea, and ammonium sulfate, in proportions sufficient to establish a composition in the range of about 1.5:1 to 25:1 weight ratio N:S and exhibiting a crystallization temperature below about 32° F.

4,239,523

METHOD FOR MANUFACTURING PHOSPHATIC FERTILIZERS HAVING A HIGH CONCENTRATION, PARTICULARLY CALCIUM METAPHOSPHATE $CA(PO_3)_2$

Vittorio Spada, Infanta Maria Teresa St., No. 21, Madrid, Spain

Filed Jul. 25, 1978, Ser. No. 927,935
Claims priority, application Spain, Jan. 31, 1978, 466.522
Int. Cl.³ C05B *17/00;* C01B *25/01*
U.S. Cl. 71—33 2 Claims



1. A method for manufacturing phosphatic fertilizers having a high concentration of calcium metaphosphate, comprising reacting phosphorite with an aqueous solution containing three mols of ammonium bisulphate per mol of calcium phosphate in the phosphorite, said reaction being conducted at ambient temperature, wherein said reaction produces a precipitate of calcium sulphate and an aqueous solution of mono- and diammonium phosphates, separating said precipitate from the last-named solution, then admixing a mineral containing calcium phosphate with said last-named solution of mono- and diammonium phosphates and heating the resultant mixture in a furnace to produce molten calcium metaphosphate, and removing the molten calcium metaphosphate from the furnace.

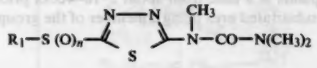
4,239,524

THIADIAZOLYL UREAS WITH HERBICIDAL EFFECT

Ludwig Nüsslein; Friedrich Arndt, and Reinhart Rusch, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 730,570, Oct. 7, 1976, abandoned, which is a continuation of Ser. No. 624,123, Oct. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 393,598, Aug. 31, 1973, abandoned. This application Mar. 5, 1979, Ser. No. 17,135
Int. Cl.³ A01N *43/82*
U.S. Cl. 71—90 9 Claims

1. A method of preventing weed growth in potato plant cultures, comprising applying to said cultures a composition consisting essentially of a compound of the formula



wherein

R_1 is an alkyl radical of 4 to 8 carbon atoms, and

n is 1 or 2,

in an amount sufficient to provide between about 0.1 to 5 kg of said compound per hectare, whereby weed growth is prevented without causing substantial damage to said potato plants.

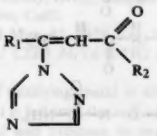
4,239,525

1,2,4-TRIAZOLE DERIVATIVES

Günther Heubach; Burkhard Sachse, both of Kelkheim, and Helmut Bürstell, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,437
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826760
Int. Cl.³ A01N *43/82;* C07D *249/08*
U.S. Cl. 71—92 8 Claims

1. A 1,2,4-triazole derivative of the formula I



(I)

in which

R_1 denotes methyl or phenyl optionally substituted by halogen, $(C_1–C_4)$alkyl or $(C_1–C_4)$-alkoxy, and

R_2 denotes the group R_3O— in which R_3 is alkyl, having up to 12 carbon atoms, which may be substituted additionally by halogen, $(C_1–C_4)$alkoxy or alkoxycarbonyl having up to 8 carbon atoms; or is alkinyl having up to 3 carbon atoms; or is cycloalkyl having up to 6 carbon atoms and optionally substituted additionally by $(C_1–C_4)$alkyl; or is phenyl optionally substituted by halogen or F_3C—, or

R_2 denotes

in which R_4 is hydrogen or $(C_1–C_4)$-alkyl optionally substituted by alkoxycarbonyl having up to 8 carbon atoms, and R_5 is $(C_1–C_4)$alkyl or phenyl optionally substituted by halogen, F_3C—, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, phenoxy or halophenoxy.

6. A method of controlling plant infestation which com-

prises treating said plants with a compound as defined in claim 1.

7. A method of regulating plant growth which comprises treating said plants with a compound as defined in claim 1.

4,239,526

SUBSTITUTED UREAS AS SUGARCANE RIPENERS

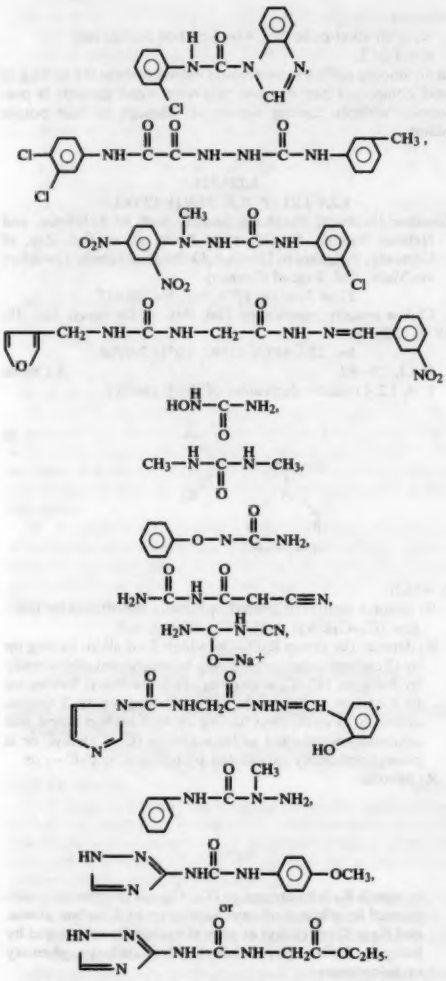
Sidney R. Siemer, Fresno, Calif., assignor to W. R. Grace & Co., New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 71,959

Int. Cl.³ A01N *43/08, 43/50, 43/52, 43/64, 47/28, 47/30*

U.S. Cl. 71—92 **19 Claims**

1. A process for modifying the ripening of sugarcane plants so as to increase their yield of sucrose which comprises applying a substituted urea in a sucrose increasing amount directly to the cane plants at a time from about 2–10 weeks prior to harvest; said substituted urea being a member of the group consisting of



or

4,239,527

2-(PYRIDYLTHIO)PYRIDINE-N-OXIDES

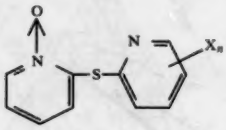
John J. D'Amico, Olivette, and David E. Schafer, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 24, 1978, Ser. No. 963,487

Int. Cl.³ A01N *43/40*

U.S. Cl. 71—94 **12 Claims**

1. A method of reducing injury to sorghum crop plants due to the application thereto of α-haloacetanilide herbicide which comprises applying to the plant locus a safening effective amount of a compound having the formula



wherein X is halogen and n is 4.

4,239,528

PLANT GROWTH REGULATING COMPOSITIONS AND METHODS USING ALPHA-ISOCYANOCARBOXYLIC ACID COMPOUNDS

Rolf Schröder, Wuppertal, and Klaus Lürssen, Berg. Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

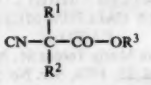
Filed Oct. 27, 1978, Ser. No. 955,436

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751782

Int. Cl.³ A01N *37/34*

U.S. Cl. 71—105 **21 Claims**

1. Plant growth regulating composition containing as active ingredient, in an effective amount to regulate plant growth, an α-isocyanocarboxylic acid compound of the formula



wherein

R^1 and R^2 together represent an alkylene chain with 2 to 5 carbon atoms and

R^3 is hydrogen, alkyl of up to 20 carbon atoms, aryl of 6 or 10 carbon atoms, aralkyl of 6 or 10 carbon atoms in the aryl moiety and 1 to 4 carbon atoms in the alkyl moiety, or carbalkoxyalkyl of 1 to 4 carbon atoms in each alkyl moiety

in admixture with a solid or liquefied gaseous diluent or carrier or in admixture with a liquid diluent or inert carrier containing a surface active agent.

4,239,529

PROCESS FOR BENEFICIATING SULFIDE ORES

James K. Kindig, Arvada, and Ronald L. Turner, Golden, both of Colo., assignors to Hazen Research, Inc., Gorden, Colo.

Continuation-in-part of Ser. No. 921,584, Jul. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 868,416, Jan. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 658,258, Feb. 17, 1976, abandoned. This application Oct. 22, 1979, Ser. No. 86,830

Int. Cl.³ C22B *1/00*

U.S. Cl. 75—1 R **52 Claims**

1. A process for beneficiating sulfide ores from gangue, excluding coal, which comprises contacting the sulfide ore with a metal containing compound under conditions which cause the metal containing compound to react substantially at the surface of the metal sulfide particles to the substantial

exclusion of the gangue particles so as to alter the surface characteristics of the metal sulfide values thereby causing a selective enhancement of the magnetic susceptibility of one or more metal sulfide values of the ore to the exclusion of the gangue in order to permit a physical separation between the metal sulfide values and the gangue.

8. A process for the beneficiation of a metal sulfide ore from gangue, excluding coal, wherein the ore is treated with from about 0.1 to 100 kilograms of a metal containing compound per metric ton of ore at a temperature within a range of 125° C. less than the general decomposition temperature of the metal containing compound in a specific system for the ore being treated for a period of time from about 0.05 to about 4 hours to cause the metal containing compound to react substantially at the surface of the metal sulfide particles to the substantial exclusion of the gangue particles so as to alter the surface characteristics of the metal sulfide values thereby causing a selective enhancement of the magnetic susceptibility of one or more metal sulfide values contained in the ore to the exclusion of the gangue so as to permit a physical separation between the metal sulfide values and the gangue.

25. A process for the beneficiation of a metal sulfide ore from gangue, excluding coal, selected from the group consisting of galena, molybdenite, sphalerite, bornite, cinnabar, arsenopyrite, smaltite, chalcocite, chalcopyrite, orpiment, realgar, pentlandite in pyrrhotite, stibnite and tetrahedrite which comprises for the ore in a specific system contacting the sulfide ore with an iron containing compound selected from the group consisting of ferrous chloride, ferric chloride, ferrocene, ferric acetylacetonate and iron pentacarbonyl at a temperature within a range of 125° C. less than the general decomposition temperature of the iron containing compound in the specific system for the ore being treated for a period of time from about 0.15 to about 2 hours to cause the iron containing compound to react substantially at the surface of the metal sulfide particles to the substantial exclusion of the gangue particles so as to alter the surface characteristics of the metal sulfide values thereby causing a selective enhancement of the magnetic susceptibility of one or more metal sulfide values of the ore to the exclusion of the gangue in order to permit a magnetic separation between the metal sulfide values and the gangue.

4,239,530

PROCESS FOR PRODUCING METALLIZED IRON PELLETS

Mehmet A. Goksel, Houghton, Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Jan. 10, 1979, Ser. No. 2,257
Int. Cl.³ C21B *13/08*
U.S. Cl. 75—34 **24 Claims**

1. A process for producing hardened, discrete pellets containing a substantial proportion of metallic iron from a finely-divided, iron oxide-containing material comprising the steps of:

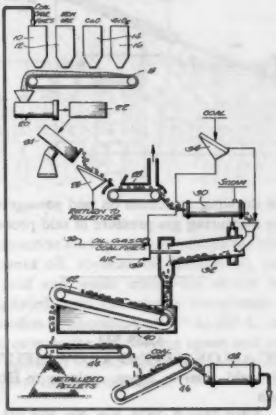
(a) preparing a moistened starting mixture including the iron oxide-containing material, a finely-divided carbonaceous material in an amount at least sufficient to reduce all the iron oxide to metallic iron, about 1 to about 30 weight % of a finely-divided bonding agent selected from a group consisting of the oxides, hydroxides and carbonates of calcium and magnesium, and mixtures thereof, and 0 up to about 3 weight % of a finely-divided siliceous material, as available SiO_2 capable of reacting with said bonding agent to form silicate or hydrosilicate bonds therewith, with a total available SiO_2 in said mixture being at least 0.5 weight percent; the weight percentages being based upon the total weight of the dry solids in said mixture;

(b) forming discrete, green pellets from said starting mixture;

(c) drying said green pellets to a moisture content of about 5% or less;

(d) hydrothermally hardening said green pellets by contacting them with steam at a temperature of about 100 to about 250° C. for a time period sufficient for said bonding agent to from silicate or hydrosilicate bonds with the available SiO_2 and produce hardened and integrally bonded masses;

(e) introducing said hardened pellets, without substantially modifying their composition, into a reduction furnace adapted to tumble said pellets; and



(f) metallizing said hardened pellets by continuously tumbling them in the reduction furnace, at a reduction temperature of about 1033° C. up to the melting point of the metallized pellets and while maintaining the overall atmosphere inside the furnace substantially non-oxidizing, for a time period sufficient to reduce a substantial portion of the iron oxide in said pellets to metallic iron.

4,239,531

SPONGE RING FEED FOR IODIDE CRYSTAL BAR CELLS

Mark B. Siddall, Albany, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Mar. 12, 1979, Ser. No. 19,328
Int. Cl.³ C22B *34/14*; C01G *25/04, 27/04*
U.S. Cl. 75—84.4 **3 Claims**

1. A method of purifying metal in an iodide crystal bar cell wherein the metal is fed into the cell and reacted therein with iodine under heat and pressure to produce pure metal, the improvement comprising loading zirconium or hafnium sponge compact in the cell in the form of self-supporting ring shaped compacts placed one on top of each other thus allowing the loading of the cell without the necessity of a supporting screen.

4,239,532

ADDITION AND MEASUREMENT OF GASES DISSOLVED IN MOLTEN METALS

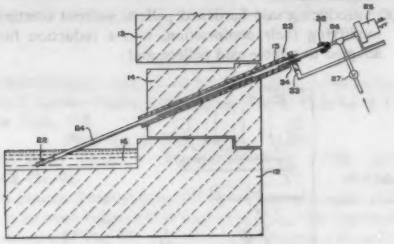
Ties Allersma, Pittsburgh, and James E. Simpson, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 11, 1978, Ser. No. 968,604
Int. Cl.³ C22B *9/00*; G01F *3/24*
U.S. Cl. 75—93 R **10 Claims**

1. Apparatus for measuring at least one dissolved gas in a liquid comprising:

a probe having a unitary outer wall to define a passageway within said probe, a portion of said outer wall to be submerged in the liquid permeable with respect to the at least one gas to be measured but impermeable to the liquid containing the at least one dissolved gas and the remaining

wall portion impermeable to both the at least one gas and the liquid;



means for drawing a vacuum on said passageway; and means for measuring gas pressure in said probe.

4,239,533

MAGNETIC ALLOY HAVING A LOW MELTING POINT

Takeshi Miyazaki, Omiya, Japan, assignor to Hitachi Metals, Ltd., Japan

Filed May 9, 1978, Ser. No. 904,321

Claims priority, application Japan, Feb. 6, 1978, 53-12206

Int. Cl.³ C22C *19/00*

U.S. Cl. 75—134 F **2 Claims**

1. A magnet alloy which consists essentially of Co, Ni and Pd, the content of Co being in the range of from 20 to 70 weight %, the content of Ni being in the range of 29 to 80 weight %, and the content of Pd being at least 35 weight %, said alloy having a magnetic flux density value B_{100} of at least 2000 G and a melting point of not more than 1350° C.

4,239,534

GA-CU ALLOY FOR USE IN EXCHANGEABLE ELECTRODE FOR AN EVAPORATION SYSTEM

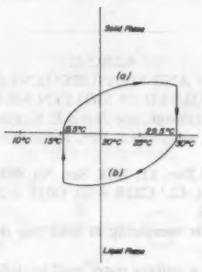
Kazuhisa Taketoshi, Sagamihara, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,291

Claims priority, application Japan, Sep. 9, 1978, 53-110236

Int. Cl.³ C22C *30/02, 30/04*

U.S. Cl. 75—134 T **5 Claims**



1. Ga-Cu alloy having the formula of $Ga_{1-x}Cu_x$, wherein x is a composition ratio parameter of Ga and Cu in a range of $0.0001 \leqq x \leqq 0.05$.

4,239,535

MAGNESIUM ALLOYS

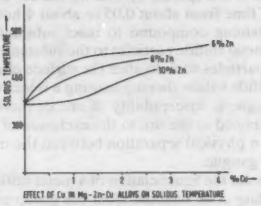
John F. King, 19 Brookside Crescent, Greenmount, Bury, and William Unsworth, 2 Ilkeston Dr., Aspull, Wigan, Lancs., both of England

Filed May 31, 1979, Ser. No. 44,272

Claims priority, application United Kingdom, May 31, 1978, 24941/78

Int. Cl.³ C22F *1/06*

U.S. Cl. 75—168 D **9 Claims**



EFFECT OF Cu IN Mg-Zn-Cu ALLOYS ON SOLIDUS TEMPERATURE

1. A magnesium alloy consisting essentially of the following constituents by weight (apart from impurities):

Zinc: 2–10%

Copper: 0.5–5%

Magnesium: Remainder aluminum being absent.

4,239,536

SURFACE-COATED SINTERED HARD BODY

Takaharu Yamamoto; Tsuyoshi Asai; Naoji Fujimori, and Masaaki Tobioka, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 8, 1978, Ser. No. 940,617

Claims priority, application Japan, Sep. 9, 1977, 52/107943; Nov. 28, 1977, 52/143080

Int. Cl.³ C22C *1/05, 29/00*

U.S. Cl. 75—238 **7 Claims**

1. A surface-coated sintered hard body, which comprises a sintered hard alloy and at least one coating layer thereon comprising at least one material selected from boronitrides and borocarbonitrides of Group IVa, Va and VIa elements.

4,239,537

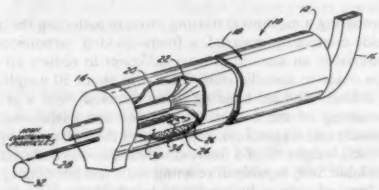
PROCESS FOR THE PREPARATION OF FERRO LIME

Allen R. Job, Pincourt, Canada, assignor to Domtar Inc., Montreal, Canada

Filed May 14, 1979, Ser. No. 38,588

Int. Cl.³ C01F *11/00*; C01G *49/00*

U.S. Cl. 75—257 **10 Claims**



1. A method of producing at least one of ferro-lime and ferro-dolime in a rotating kiln having an inlet end and a discharge end and a flame extending along said kiln to heat the kiln to the required temperature for calcination, introducing a calcinable alkali earth composition at the inlet end of said kiln, calcining said composition and heating said composition to a temperature to substantially instantaneously combine with iron contained in particles injected to the kiln, injecting said parti-

cles having a maximum dimension of less than ¼ inch into said kiln and onto the surface of said calcined composition between the discharge end of said kiln and said flame and where said calcined composition is at a temperature to instantaneously react with said iron, instantaneously combining said iron content of said particles with said calcined composition thereby to form a product comprising at least one of ferro-lime and ferrodolime in said kiln and withdrawing said product from the discharge end of said kiln.

4,239,538

CATALYTIC PRIMER

Nathan Feldstein, Kendall Park, N.J., assignor to Surface Technology, Inc., Princeton, N.J.

Division of Ser. No. 550,435, Feb. 18, 1975, Pat. No. 3,993,848. This application Mar. 30, 1976, Ser. No. 672,045
Int. Cl.³ C23C *3/02*
U.S. Cl. 106—1.11 **3 Claims**

1. An improved catalytic primer composition for use in the electroless plating of non-metallic substrates comprised of the admixture, in aqueous media, of stannous ions, copper ions, and a linking agent capable of forming additional sites on said substrate for adsorption of stannous ions wherein stannous ions are in excess to copper ions and further wherein said linking agent is selected from the group consisting of phenol, cresol and mixtures thereof.

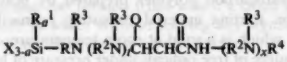
4,239,539

AMINOSILANE MODIFIED ZINC-RICH COATING COMPOSITIONS

Thomas Ginsberg, Piscataway, and Lawrence G. Kaufman, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,513
Int. Cl.³ C09D *5/10*; C23F *11/00*
U.S. Cl. 106—1.17 **11 Claims**

1. A composition for protecting ferrous metals from corrosion comprising particulate zinc, an unhydrolyzed or a partially hydrolyzed organic silicate hydrolyzed up to about 40% and a hardening amount of an aminoorganosilicon acylamino compound having the formula:



wherein:

X is an alkoxy radical having 1 to 6 carbon atoms;

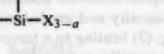
R is a alkylene radical having 1 to 4 carbon atoms;

R^1 is hydrogen or an alkyl radical having 1 to 4 carbon atoms;

R^2 is an alkylene radical having 2 to 4 carbon atoms;

R^3 is a monovalent radical selected from the group consisting of hydrogen alkyl having 1 to 20 carbon atoms or phenyl;

R^4 is a monovalent radical selected from the group consisting of alkyl having 1 to 20 carbon atoms, phenyl or silyl having the formula:



wherein X, R and R^1 are as defined above;

Q is a monovalent radical selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, phenyl or an ester radical having the formula —COOR⁵ wherein R^5 is alkyl having 1 to 4 carbon atoms;

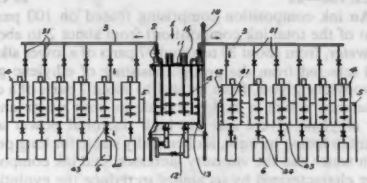
a is an integer having values of 0 to 2 and t and x are each integers having a value of 0 to 4, with the proviso that when x is at least 1, R^4 can also be hydrogen.

4,239,540

MILKY CURING AGENT FOR CONCRETE AND PREPARATION METHOD THEREOF

Chen Hsin-Chu, No. 34-7, Hsin-Tang-Pu, Pa-Li Hsiang Taipei Hsien, Taiwan

Filed Nov. 21, 1979, Ser. No. 96,611
Int. Cl.³ C08L *91/00*
U.S. Cl. 106—12 **2 Claims**



1. A milky concrete curing agent produced by mixing paraffin wax, cocoanut oil, soybean oil, linseed oil, stearic acid, Hexacosanic acid and water which are slowly heated and thoroughly agitated until the wax is completely dissolved, raising the reaction temperature to 83° to 88° C. and adding ethyl cyanuric ester as the emulsifying agent, and reacting the mixture with agitation for 2.5 hours within said temperature range to complete the emulsification.

4,239,541

MILDEW SEALING COATING COMPOSITION AND METHOD OF USING

Emanuel F. Marek, Wonder Lake, and Alex H. Migdal, Hoffman Estates, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jun. 29, 1978, Ser. No. 920,342
Int. Cl.² C09D *5/14*
U.S. Cl. 106—15.05 **4 Claims**

1. A diaphanous mildew sealing, coating composition comprising water containing latex particles coalescable into a film at room temperature emulsified therein, an alkaline-stable mildewcidal agent present in an amount sufficient to kill mildew contacted by the composition, and a nonvolatile, relatively insoluble, alkaline earth compound selected from the group consisting of the oxides and hydroxides of barium, said compound being present in a weight percent of about 0.006 to about 0.03 times its equivalent weight.

4,239,542

WATER-SOLUBLE FLAME RETARDER AND PROCESS FOR PREPARING THE SAME

Tsukuru Kinoshita; Shuji Masuda, both of Tokushima, and Tetuo Hasegawa, Naruto, all of Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Filed Jun. 1, 1979, Ser. No. 44,695
Claims priority, application Japan, Dec. 7, 1978, 53-152305
Int. Cl.³ C09D *5/18*
U.S. Cl. 106—18.14 **9 Claims**

1. A water-soluble flame retarder comprising (1) a condensed ammonium phosphate having an average degree of condensation of not more than 60 and (2) 5 to 70 parts by weight, based on 100 parts by weight of said condensed ammonium phosphate, of a mixture containing 50% to 70% by weight of biuret and 20% to 30% by weight of triuret based on the weight of the mixture, said mixture being produced from urea in the presence of a condensed ammonium phosphate.

4,239,543

NON-CRUSTING JET INK AND METHOD OF MAKING SAME

J. Donald Beasley, Arlington Heights, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 833,786, Sep. 16, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 11,003

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—22 **18 Claims**

1. An ink composition comprising (based on 100 parts by weight of the total ink composition) from about 2 to about 80 parts water, from about 20 to about 97 parts of a lower alkylene glycol selected from the group consisting of ethylene glycol and propylene glycol, from about 1 to about 7 parts of a coloring material which is highly soluble in both water and the lower alkylene glycol and has high tinctorial power and is resistant to fading by light, is chemically stable for long periods in both water and the viscosity increaser, said ink composition further characterized by its ability to reduce the evolution of gases at reduced pressure and an adjusted pH in the range of from 3 to 6, inclusive.

4,239,544

JET DROP PRINTING INK COMPOSITION

Joseph G. Strem, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

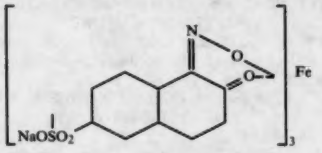
Filed Apr. 23, 1979, Ser. No. 32,082

Int. Cl.³ C09D *11/02*

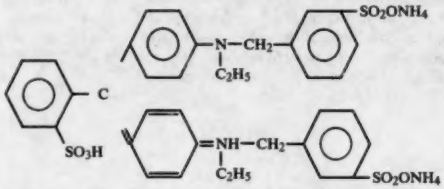
U.S. Cl. 106—22 **6 Claims**

1. A jet drop printing ink comprising:

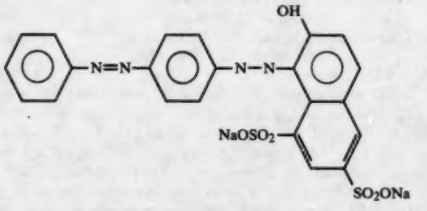
about 3.8 weight percent of a dye having the chemical formula



about 2.2. weight percent of a dye having the chemical formula



about 1.0 weight percent of a dye having the chemical formula



and balance water, said ink being infrared absorbent at wavelengths utilized by optical character readers and appearing visually black to the human eye.

4,239,545

CELLULOSE DERIVATIVE REVERSE OSMOSIS MEMBRANE AND CASTING SOLUTION AND ADDITIVE FOR PREPARING THE SAME

Tadahiro Uemura, Kyoto, and Masaru Kurihara, Otsu, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 10, 1978, Ser. No. 932,533

Int. Cl.³ C08L *1/12, 1/28*

U.S. Cl. 106—181 **10 Claims**

1. In a casting solution for the preparation of a membrane of a cellulose derivative selected from the group consisting of cellulose ether and cellulose ester, having a good balance of membrane separation characteristics, said solution containing said cellulose derivative, and an organic water soluble solvent therefor, the improvement which comprises including a tetracarboxylic acid represented by the following formula:

$$R—(CO_2H)_4$$

wherein R is a tetravalent aliphatic or alicyclic organic radical having from 2 to 10 carbon atoms, whereby the membrane which is prepared has not more than 0.2 voids per 0.844 mm^2.

4,239,546

HYDROCARBON POLYMERS TO IMPROVE THE HARDNESS OF WAXES

Stephen E. Russell; Phillip M. Story, and Charles S. Letcher, all of Tulsa, Okla., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 21, 1978, Ser. No. 926,763

Int. Cl.³ C08L *91/06;* C09D *3/393*

U.S. Cl. 106—270 **11 Claims**

1. A wax blend characterized by the presence of sufficient hydrocarbon polymer to improve the hardness of the wax, said hydrocarbon polymer having congealing and melting points which are essentially no higher than those of its starting materials, said hydrocarbon polymer prepared by polymerizing a hydrocarbon starting material consisting primarily of alpha olefins and which is a solid at room temperature, in the presence of a source of free radicals under pressure of less than 500 psi but sufficient to keep the reactants from vaporizing at a temperature of about 40° to 250° C.

4,239,547

RECYCLING SPENT ASPHALTIC CONCRETE

William C. McBee, and Thomas A. Sullivan, both of Boulder City, Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 12, 1979, Ser. No. 2,829

Int. Cl.³ C08L *95/00*

U.S. Cl. 106—274 **4 Claims**

1. A process for recycling spent embrittled asphaltic concrete, said spent concrete consisting essentially of asphalt of increased viscosity and graded mineral aggregate, comprising (1) crushing, (2) heating to a temperature of about 120° to 150° C. in a substantially nonoxidizing atmosphere, (3) mixing the heated material with sulfur, or a mixture of sulfur and asphalt, at 120° to 150° C. and for a time sufficient to permit thorough mixing and reaction between the sulfur and the asphalt fraction of the spent concrete, the amount of sulfur being about 20 to 50 percent by weight of the asphalt in the concrete, whereby the viscosity of the asphalt is lowered and its penetration point is increased with minimal lowering of the softening point.

4,239,548

TITANIUM DIOXIDE PIGMENT

Brian Barnard, Middlesbrough, and William T. Laverick, Sedgefield, both of England, assignors to Tioxide Group Limited, Billingham, England

Filed Dec. 6, 1979, Ser. No. 100,716

Claims priority, application United Kingdom, Dec. 21, 1978, 49610/78; Nov. 20, 1979, 40132/79

Int. Cl.³ C09C 1/36

U.S. Cl. 106—300 18 Claims

1. A titanium dioxide pigment comprising particles of rutile titanium dioxide having an inner coating comprising cerium and phosphate radicals and an outer coating covering the inner coating and comprising aluminium and phosphate radicals.

4,239,549

EASILY WATER-DISPERSED FORMULATIONS OF FINELY DIVIDED PHTHALOCYANINES

Wolfgang Fabian, Wilhelmsfeld; Joachim Kranz, Ludwigshafen, and Guenter Stoeckelmann, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 15, 1977, Ser. No. 815,986

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2632214

Int. Cl.³ C09B 47/04; D06P 3/14, 3/60

U.S. Cl. 106—308 Q 16 Claims

1. An easily water-dispersed phthalocyanine pigment formulation which contains, based on the total weight of the formulation,

(a) from 70 to 95 percent by weight of a finely dividied phthalocyanine pigment of which the mean primary particle size is less than 0.5 μm, and

(b) from 30 to 5 percent by weight of at least one alkylbenzenesulfonic acid or alkylnaphthalenesulfonic acid having from 1 to 3 alkyl of 8 to 20 carbon atoms in each alkyl, said at least one sulfonic acid being present in free acid form or in the form of its water-soluble salt, the formulation being obtained by introducing and mixing the pigment (a) and the acid (b), in any sequence, into an inert aprotic solvent having a boiling point below 135° C., stirring or kneading the resulting mixture at from room temperature up to the boiling point of said aprotic solvent until an homogenous dispersion has formed from which a dried sample is dispersible in water without leaving any significant residue, and then removing the aprotic solvent.

4,239,550

FLOWING AGENT FOR CONCRETE AND MORTAR AND PROCESS FOR PRODUCING THE SAME

Leo Köhler, Bobenheim, Fed. Rep. of Germany, assignor to Firma Holmen GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,812

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1978, 2803923; Mar. 14, 1978, 2811098

Int. Cl.³ C04B 7/35

U.S. Cl. 106—314 15 Claims

1. A flowing agent for concrete and mortar comprising a mixture of lignin sulfonate and sulfomethylated or ring-sulfonated aromatic compounds selected from the group consisting of phenol, napthalene, cresol and a mixture thereof, wherein said mixture is after-condensed and after-sulfitized.

4,239,551

BRUSH ARRANGEMENT AND SEQUENCING FOR TURNTABLE CAR WASH

Judson L. Smith, 5432 Lighthouse La., Tempe, Ariz. 85283

Filed Apr. 23, 1979, Ser. No. 32,226

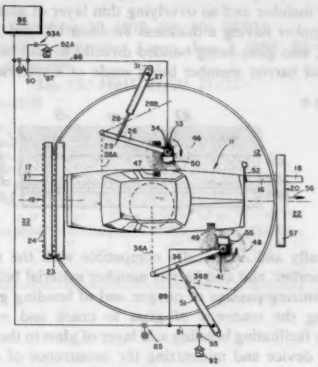
Int. Cl.³ B08B 7/00

U.S. Cl. 134—6 23 Claims

1. A method of scrubbing the exterior of a vehicle comprising the steps of:

moving the vehicle onto a turntable;

applying powered scrubbing means to a front end portion of the vehicle as the vehicle is moved onto the turntable and thereby power scrubbing the front end portion of the vehicle as it is moved onto the turntable;



rotating the turntable to rotate the vehicle; and

power scrubbing side and rear portions of the vehicle with the same powered scrubbing means as the vehicle is rotated.

4,239,552

MACHINE DISHWASHING, USING POLYHYDRIC ALCOHOLS, CARBOXYLIC ACIDS AND OR ESTERS OF THESE AS RINSING AGENTS

Johannes Perner, Neustadt; Dieter Stoeckigt, Ludwigshafen; Paul Diessel, Maanheim; Franz Merger, Frankenthal, and Juergen Paetsch, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,776

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2833991

Int. Cl.³ C11D 1/72, 3/20, 7/08, 7/26

U.S. Cl. 134—28 7 Claims

1. In a process for the machine washing of dishes, using several cleaning and rinsing cycles, the rinsing being carried out with oxyalkylated compounds containing active hydrogen atoms and solubilizers, with or without monohydric or polyhydric alcohols, the improvement wherein a rinsing liquor concentrate is employed which contains dihydric, trihydric or tetrahydric alcohols, monobasic carboxylic or hydroxycarboxylic acids, or mixtures of these, the alcohols and carboxylic acids being of 5 to 9 carbon atoms, of which one carbon atoms is quaternary, the alcoholic hydroxyl groups being exclusively primary, and the carboxyl group being bonded to the quaternary carbon atom, the amount of compound containing a quaternary carbon atom being at least about 0.2% by weight based on the weight of the concentrate.

4,239,553

THIN FILM PHOTOVOLTAIC CELLS HAVING INCREASED DURABILITY AND OPERATING LIFE AND METHOD FOR MAKING SAME

Allen M. Barnett, Newark; James V. Masi, Wilmington, and Robert B. Hall, Newark, all of Del., assignors to University of Delaware, Newark, Del.

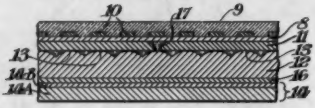
Filed May 29, 1979, Ser. No. 43,316

Int. Cl.³ H01L 31/06; B05D 5/12

U.S. Cl. 136—256 15 Claims

1. In a photovoltaic device of the type comprising a first electrical contact means, a layer of absorber material in ohmic electrical contact with said first electrical contact means, trans-

parent encapsulation means overlying said first electrical contact means and said absorber a layer of collector material in rectifying electrical contact with said absorber and forming a junction therewith, and a second electrical contact means in ohmic electrical contact with said collector, the improvement being said encapsulant means comprises a composite layer of a barrier member and an overlying thin layer of glass, said barrier member having a thickness between 100 and 10,000 angstroms, said glass being bonded directly to said barrier member, said barrier member being made of a material which is



chemically and electrically compatible with the material of said absorber, and said barrier member material being capable of minimizing passage of oxygen and of bonding glass and of reducing the tendency of glass to crack and microfissure thereby facilitating bonding said layer of glass to the remainder of said device and minimizing the occurrence of cracks and microfissures in said layer of glass and minimizing the passage of oxygen and moisture and air through any cracks or microfissures in said layer of glass to preserve the stoichiometry of said underlying, absorber material.

4,239,554

SEMICONDUCTOR PHOTOELECTRIC CONVERSION DEVICE

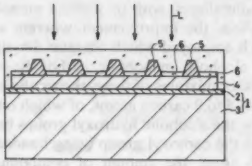
Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Filed Jul. 16, 1979, Ser. No. 58,077

Claims priority, application Japan, Jul. 17, 1978, 53-86867; Jul. 17, 1978, 53-86868

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—255 **7 Claims**



1. A semiconductor photoelectric conversion device employing a semiconductor layer having at least one inter-semiconductor heterojunction, which comprises at least a first non-single-crystal semiconductor region having a first energy gap, a second non-single-crystal semiconductor region having a second energy gap different from the first energy gap, and a third non-single-crystal semiconductor region defined between the first and second semiconductor regions to serve as a heterojunction, and wherein the third semiconductor region has an energy gap which successively changes from the first energy gap on the side of the first semiconductor region to the second energy gap on the side of the second semiconductor region, and wherein the semiconductor layer has doped therein a recombination center neutralizer and a conductive material.

4,239,555

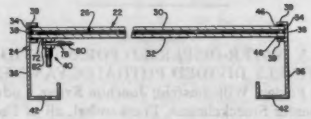
ENCAPSULATED SOLAR CELL ARRAY

Ronald S. Scharlack, Brookline, and Eric Tornstrom, Acton, both of Mass., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Jul. 30, 1979, Ser. No. 61,634

Int. Cl.³ H01L *31/04*

U.S. Cl. 136—251 **7 Claims**



1. In a solar panel sub-assembly comprising in combination:

an array of photovoltaic cells responsive to solar radiation electrically interconnected to one another by a plurality of electrical conductors;

an enclosure supporting said array, said enclosure including a rear cover, a front cover transmissive to solar radiation to which said cells are responsive, and a peripheral seal sealing together in spaced-apart relationship said front and rear covers, said front and rear covers being of sheet-like form having substantially flat surfaces; and

a plurality of terminals suitable for electrically connecting said array to a load external to said enclosure, each of said terminals penetrating through a portion of said enclosure and being electrically connected to a selected one of said cells by an electrical conductor;

the improvement wherein at least one of said terminals is tubular in form whereby an elastomer transmissive to said solar radiation to which said cells are responsive may, while fluid, be injected into said enclosure through said at least one terminal to encapsulate said array.

4,239,556

SENSITIZED STAINLESS STEEL HAVING INTEGRAL NORMALIZED SURFACE REGION

Harvey E. Cline, Stanford, Calif.; Thomas R. Anthony, and Harvey D. Solomon, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,238

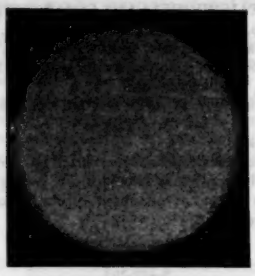
Int. Cl.³ B32B *38/40*; C21D *1/34*; C22C *38/40*

U.S. Cl. 148—38 **5 Claims**

1. An article of manufacture comprising

a discrete body of an austenitic grade of stainless steel including a sensitized core with an integral outer surface region of normalized austenite steel formed in situ from the core and encompassing said core to a depth in the range of from about 1×10^{-2} cm to 1 cm and to impart passivity to the stainless steel body in a corrosive environment, said region being characterized by having the chromium content thereof homogenized throughout said region with substantially all precipitated carbides being

absent from said region, including the grain boundaries, said region being further characterized in that the chemical composition of said region is the same as the chemical composition of said core.



4,239,557

THERMALLY STABLE SINTERED POROUS METAL ARTICLES

Edward L. Thellmann, Walton Hills, and Anton L. Gombach, Euclid, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 644,124, Dec. 24, 1975, abandoned. This application Jan. 11, 1978, Ser. No. 868,693

Int. Cl.³ C21D *1/00;* **B22F** *3/24, 3/10;* **H01B** *1/02*

U.S. Cl. 148—126 **3 Claims**

1. A method of producing a porous sintered metal anode which is both electrically conductive and essentially physically thermally stable in that the porosity of said anode does not significantly change when subsequently exposed to a temperature approaching the original sintering temperature of said sintered metal anode which method comprises the steps of:

preparing a mixture of base metal particles consisting essentially of from about 70 to about 95 weight percent of a metal selected from the group consisting of nickel, cobalt, iron and mixtures thereof with said particles having a particle size ranging from about 0.1 microns to about 200 microns and from about 5 to about 30 weight percent of conductive dispersoid particles consisting essentially of a metal selected from the group consisting of chromium, tungsten, molybdenum and mixtures thereof with said particles having a particle size ranging from about 0.01 microns to about 50 microns;

forming said mixture into an anode of the desired shape;

heating said formed anode to a sintering temperature which is at least about 75% of the melting point of said base metal particles, said melting point being in degrees Fahrenheit, to form a sintered anode;

compacting said sintered anode to a degree sufficient to cause it to have a porosity ranging from about 55 to 85 percent; and

subjecting said so-compacted anode to a temperature sufficient to anneal the same.

4,239,558

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES UTILIZING EPITAXIAL DEPOSITION AND TRIPLE DIFFUSION

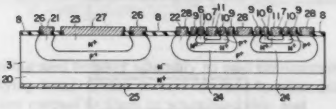
Mitsuharu Morishita, and Shiroh Iwatani, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Himeji, Japan

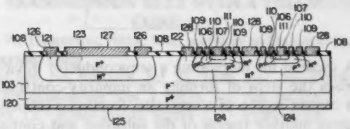
Filed May 30, 1979, Ser. No. 43,873

Claims priority, application Japan, Jun. 1, 1978, 53-66869; Jul. 3, 1978, 53-81159

Int. Cl.³ H01L *21/20, 21/22*

U.S. Cl. 148—175 **9 Claims**





1. A method of manufacturing a semiconductor device having at least one power transistor and a plurality of transistors for small signals formed on one semiconductor substrate, comprising the steps of:

preparing a highly doped semiconductor substrate of one conductivity type,

providing a semiconductor layer of said one conductivity type on an entire surface of said substrate, said semiconductor layer having a high specific resistance,

simultaneously providing at least a first and a second highly doped semiconductor regions of the other conductivity type in and around the surface portion of said semiconductor layer, said first region serving as a base region for said power transistor and said second region forming separation regions for said plurality of transistors for small signals,

providing a highly doped, third semiconductor region of said one conductivity type in said first highly doped semiconductor region of said other conductivity type and simultaneously providing a plurality of highly doped, fourth semiconductor regions of said one conductivity type in said second semiconductor region,

providing a highly doped, fifth semiconductor regions of said other conductivity type in each of said fourth semiconductor regions simultaneously,

simultaneously providing a highly doped, sixth semiconductor regions of said one conductivity type in each of said fifth semiconductor regions, and

providing electrodes on said substrate, said first region, said third region, said fourth regions, said fifth regions and said sixth regions, respectively.

4,239,559

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE BY CONTROLLED DIFFUSION BETWEEN ADJACENT LAYERS

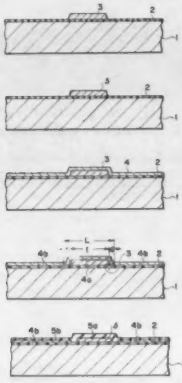
Satoru Ito, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed Apr. 17, 1979, Ser. No. 30,812

Claims priority, application Japan, Apr. 21, 1978, 53-46531; Apr. 24, 1978, 53-47763; Apr. 24, 1978, 53-47764; Apr. 24, 1978, 53-47766

Int. Cl.[3] H01L *21/225, 21/31*

U.S. Cl. 148—188 23 Claims



1. A method for fabricating a semiconductor device which comprises the steps of forming an impurity-containing layer over a certain region of a substrate, forming a semiconductor layer over another region of the substrate and contiguous to the impurity-containing layer, and doping the impurity contained in the impurity-containing layer into the semiconductor layer to selectively form an impurity-containing semiconductor region, contiguous to the impurity-containing layer, and an impurity-free semiconductor region in the semiconductor layer, wherein said impurity-containing layer and the impurity-free semiconductor region in the semiconductor layer are spaced from each other by said impurity-containing semiconductor region.

4,239,560

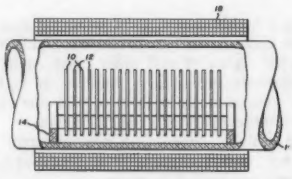
OPEN TUBE ALUMINUM OXIDE DISC DIFFUSION

Mike F. Chang, Liverpool; David K. Hartman, Manlius; Richard W. Kennedy, Skaneateles; Alfred Roesch, Auburn, all of N.Y., and Henri B. Assalit, Torrance, Calif., assignors to General Electric Company, Auburn, N.Y.

Filed May 21, 1979, Ser. No. 40,881

Int. Cl.[3] H01L *21/223*

U.S. Cl. 148—189 16 Claims



1. A method for diffusing aluminum into a semiconductor comprising:

(a) disposing a semiconductor wafer in a diffusion tube;

(b) disposing a single crystal sapphire source wafer in said tube; and

(c) heating said tube to a temperature in excess of 1000° C.

4,239,561

PLATEAU PROPELLANT COMPOSITIONS

Albert T. Camp, Welcome, Md.; Elmer R. Csanady, Washington, D.C., and Paul R. Mosher, Indian Head, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1973, Ser. No. 421,363

Int. Cl.[3] C06B *45/10*

U.S. Cl. 149—19.8 10 Claims

1. In a double base propellant plasticized by primary bonded nitrate esters, the improvement comprising adding about 0.2 to about 2 weight percent of monobasic cupric β-resorcylate as a ballistic modifier.

4,239,562

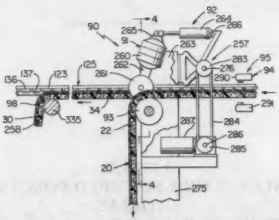
APPARATUS FOR AND METHOD OF DETECTING RELEASE TAPE SANDWICHED BETWEEN LAYERS OF A CARPETING STRIP

Michael E. McLean, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Apr. 10, 1979, Ser. No. 28,783

Int. Cl.[3] B32B *5/00*

U.S. Cl. 156—64 20 Claims



1. In an apparatus for continuously making carpeting strip having integral joining means; said apparatus comprising means for continuously moving a wear layer having a bottom surface and opposed side edges in a rectilinear path; a device for fixing a release tape against said bottom surface adjacent an associated side edge portion of said wear layer; said release tape defining a free part of said wear layer disposed thereagainst; and means for forming a compressible backing material against said bottom surface and against said tape so that said tape isolates a portion of said backing material from said wear layer and is sandwiched there-between; said tape being removable and serving to isolate adhesive comprising said integral joining means; the improvement comprising; a photoelectric apparatus for detecting said release tape in its concealed sandwiched position.

4,239,563

PROCESS FOR THE USE OF VINYL ACETATE-ETHYLENE COPOLYMER EMULSIONS TO ADHERE FIBERS TO CARPET BACKING

John G. Iacoviello, Somerville, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 866,984, Jan. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 505,962, Sep. 16, 1974, abandoned, which is a division of Ser. No. 195,018, Nov. 2, 1971, abandoned. This application Sep. 5, 1979, Ser. No. 72,747

Int. Cl.[3] B32B *27/04*

U.S. Cl. 156—72 7 Claims

1. The process for adhering fibers to carpet backing which comprises applying a polymeric emulsion containing as the only adhesive polymeric component a vinyl acetate-ethylene copolymer consisting of between about 61 and about 68 parts

by weight of vinyl acetate per hundred parts of said copolymer, between about 32 and about 38 parts by weight of ethylene per hundred parts of said copolymer and up to about 0.7 parts by weight of another monomer selected from the group consisting of maleic acid, triallyl cyanurate and mixtures thereof per hundred parts of said copolymer; a dispersant in an amount between about 0.1 part and about 3 parts per hundred parts of said copolymer; and a thickening agent in an amount between 0.1 part and about 4 parts per hundred parts of said copolymer to the carpet backing material, removing excess polymeric emulsion and drying the emulsion thereby causing the fibers to adhere to the carpet backing material; said emulsion having a glass transition temperature of between about −35° C. and about −10° C.

4,239,564

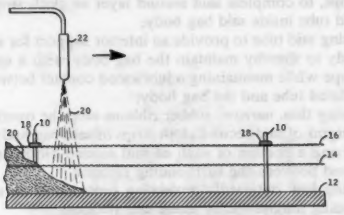
METHOD FOR COATING A STRUCTURE WITH A UNIFORM FOAM LAYER

Gary C. Krumweide, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 502,586, Sep. 3, 1974, abandoned. This application Jul. 30, 1976, Ser. No. 710,041

Int. Cl.³ B32B *31/18, 5/20*

U.S. Cl. 156—79 **5 Claims**



1. A method of forming a coating of low, uniform, density foam to a uniform thickness on a surface, which method comprises the steps of:

securing a plurality of spaced upstanding studs to a surface to be coated with foam;

stretching taut a sheet of screen material having at least about 70% open area;

lowering said screen over said studs to a selected distance above said surface;

releasing said screen so that said screen is supported by frictional engagement with said studs;

projecting a foamable liquid material through said screen in a manner producing a substantially uniform coating over said surface;

expanding said foam until the foam coating extends through said screen;

at least partially curing said foam to a self-sustaining state; and

stripping away said screen, carrying therewith the foam which has expanded through said screen.

4,239,565

OFF-THE-HIGHWAY RADIAL TIRE BUILDING SYSTEM

Virgil E. Henley, Akron; James R. Hineborg, Cuyahoga Falls, and Donald H. Nixdorf, Canton, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Nov. 29, 1974, Ser. No. 528,175

Int. Cl.³ B29H *17/10*

U.S. Cl. 156—126 **21 Claims**

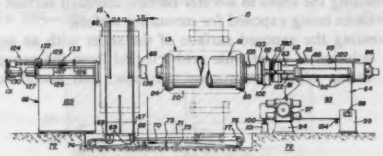
1. A method of making a pneumatic tire comprising the steps of:

A. positioning a tire carcass around an inflatable detachable building drum positioned on a first shaft;

B. forming a breaker assembly around a collapsible breaker building drum positioned on a second shaft coaxial with said first shaft;

C. transporting said breaker assembly by a breaker transport support means from said breaker building drum to around said detachable building drum;

D. inflating said detachable building drum and said tire carcass thereon to a toric shape and mating said carcass with said beaker assembly;



E. stitching said breaker assembly to said tire carcass;

F. applying tread rubber to said stitched breaker assembly and tire carcass to form an assembled tire; and

G. dismounting said detachable building drum with said assembled tire in an inflated toric configuration thereon from said first shaft.

4,239,566

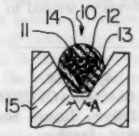
METHOD OF FORMING A ROUND SELF ORIENTING POWER TRANSMISSION BELT WITH A TRIANGULAR CORE

Anderson W. Howerton, Nixa, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 929,608, Jul. 31, 1978, Pat. No. 4,215,589. This application Nov. 1, 1979, Ser. No. 90,216

Int. Cl.³ B29D *29/00;* **B29H** *7/22;* **F16G** *1/28*

U.S. Cl. 156—137 **7 Claims**



1. A method for manufacturing an endless power transmission belt having a round cross-section and a triangular core which comprises the steps of

(a) providing a triangular core comprising a plurality of longitudinally extending load-carrying members embedded in a rubber compound;

(b) wrapping said core with at least two layers of rubberized fabric; and

(c) curing at least a portion of the length of the resulting wrapped core in a curing mold having a round cross-section.

4,239,567

REMOVABLY HOLDING PLANAR ARTICLES FOR POLISHING OPERATIONS

Richard H. Winings, Berks County, Pa., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,810

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—154 **12 Claims**

1. A method of removably mounting at least one planar article on a microcellular polyurethane surface for polishing such article, comprising:

treating the surface with an organic acid selected from the group consisting of citric, propionic, formic, and acetic

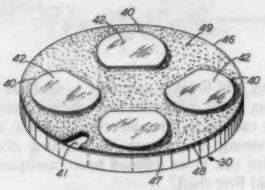
acid to promote adhesion of the article to the surface by activating the surface; and

positioning the planar article on the activated surface such that the article becomes adhered to such surface sufficiently to retain the article securely against lateral, shear forces experienced during polishing the article.

8. A method of removably mounting silicon wafers on a microcellular, polyurethane foam sheet having a relatively hard, but flexible surface for polishing such wafers comprising:

bonding the sheet to a wafer carrier, the hard surface of the sheet being exposed for mounting wafers;

treating the exposed surface of the sheet with an aqueous solution of an organic acid selected from the group consisting of citric, propionic, formic, and acetic acid to



promote adhesion of the article to the surface by activating the surface;

scraping the treated surface of the sheet to further activate the surface and to substantially remove any excess solution from the surface;

positioning the wafers on the treated surface such that the wafers become adhered to such surface sufficiently to retain the wafers securely against lateral, shear forces experienced during polishing the wafers;

polishing the wafers, the wafers remaining positioned on the mounting sheet; and

demounting the wafers from the sheet by applying a force to the wafers in a direction normal to and away from the sheet.

4,239,568

METHOD OF MANUFACTURING A BALL

Kazuyasu Takazawa, Tokyo, Japan, assignor to Tachikara Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1978, Ser. No. 922,754

Claims priority, application Japan, Feb. 2, 1978, 53/10875

Int. Cl.[3] **B32B** *31/02;* **B29C** *17/02;* **A63B** *41/08, 45/00*

U.S. Cl. 156—155 **4 Claims**

1. A method of manufacturing a ball, comprising:

manufacturing a spherical hollow body of a brittle frangible material;

adhering a first number N of four-sided polygonal-shaped cloth strips on said spherical hollow body in such a manner that the cloth strips overlap at the margins thereof to provide a first layer of a bag body;

adhering a second number N-1 of four-sided polygonal-shaped cloth strips on said bag body in overlying relation with respective ones of said cloth strips of said first layer to form a second layer of said bag body, with said second cloth strips overlapping each other at the margins thereof at the overlaps of the margins of said first cloth strips, such that all but one of said first cloth strips is covered by a respective second cloth strip;

collapsing said brittle spherical hollow body into pieces within said bag body, and thereafter cutting an opening through said still uncovered one of said cloth strips of said first layer of said bag body;

taking the collapsed pieces of said spherical hollow body out of said bag body through said opening;

providing a tube inflatable to a round configuration and having a valve for such inflating;

coating the exterior of said tube with a lubricant;

inserting said tube in a folded condition through said opening into said bag body such that said valve protrudes out of said bag body through said opening;

adhering the turned-up edges of said opening to the base of said tube valve;

providing another four-sided polygonal-shaped second cloth strip with an aperture and adhering said another second cloth strip in overlying relation on said uncovered one of said first cloth strips with said valve extending out through said aperture and the portion of said another second cloth strip surrounding said aperture overlying said edges of said opening in said one of said first cloth strips, to complete said second layer of cloth strips with said tube inside said bag body;

inflating said tube to provide an interior support for said bag body to thereby maintain the bag body with a spherical shape while maintaining a lubricated contact between the inflated tube and the bag body;

adhering thin, narrow, rubber ribbons atop the overlapping margins of said second cloth strips of said bag body while leaving a portion of each of said second cloth strips exposed between the surrounding ribbons;

forming low outwardly-projecting protrusions on and extending longitudinally along said ribbons;

sizing four-sided polygonal leather sheets to fit snugly upon the respective second cloth layer areas bounded by said low protrusions; and

adhering said sized leather sheets to respective ones of said second cloth strips while using said protrusions to help guide the edges of said leather sheets into position on said bag body so that said sized leather sheets are snugly bounded by said protrusions.

4,239,569

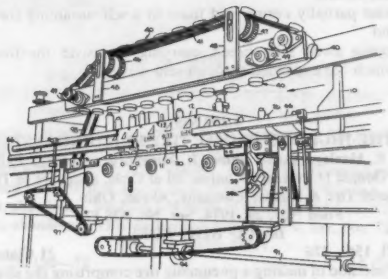
HEAT TRANSFER LABELING MACHINE

Albert J. Harvey, Fairfield, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,372

Int. Cl.[2] **B65C** *3/26;* **B44C** *57/08*

U.S. Cl. 156—156 **37 Claims**



1. An apparatus for continuously applying heat transfer labels carried on a web to individual articles to be decorated at a decorating station which comprises:

conveying means for continuously carrying said articles to a decorating station;

a plurality of receptacle means disposed adjacent to said conveying means suitable for receiving and holding said articles as they pass through said decorating station;

means for continuously driving said receptacle means containing the article to be decorated therein through said decorating station;

means for driving said label carrying web through said decorating station;

means for heating the labels on said web prior to arrival at said decorating station;

means for engaging and inflating said article while at said decorating station;

means for urging said heated label into engagement with said article to be decorated at said decorating station; and

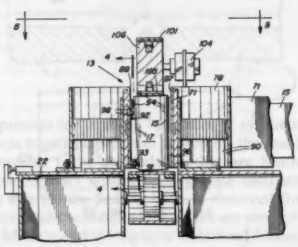
means for conveying said decorated article away from said decorating station.

4,239,570

METHOD AND MACHINE FOR TRANSFERRING INDICIA TO TAPERED ARTICLES

Daniel Kerwin, Lombard, Ill., assignor to The Meyercord Co., Carol Stream, Ill.

Filed Oct. 10, 1978, Ser. No. 949,527
Int. Cl.³ B65C *3/16*
U.S. Cl. 156—163 **7 Claims**



1. The method of applying indicia to a series of articles, the indicia comprising a series of spaced decals on an elongated web, said method comprising the steps of moving a series of articles between spaced belt means, moving the indicia in spaced apart relation across one of the belt means and along a generally linear path, utilizing the other of the belt means to tip the articles to place a side of each article in a plane parallel to the indicia, the articles moving in a linear path parallel to the path of the indicia, and utilizing the belt means to roll the articles over the indicia during said movements and while said articles are tipped to produce slippage between the articles and the indicia.

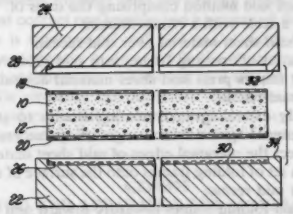
2. A machine for applying indicia to a succession of tapered articles while the articles are in movement, the indicia being removably attached to an elongated web and being spaced on said web, said indicia comprising decals, said machine comprising an indicia transfer section including two spaced apart belt means, web transport means for moving the web through said section and across one of said belt means and the portion of the web extending across said belt means moving in a generally linear direction, article transport means for moving a series of spaced apart tapered articles through said section and closely adjacent said portion of the web, said belt means including means for tipping said articles as they move through said section to place the side of each tapered article which is adjacent the web in a plane which is parallel to the plane of said portion of the web, and said belt means pressing each of said articles against said portion of the web and rolling the article along said portion of the web and over an indicium as the article moves through the transfer section, whereby the web and the articles are moved in parallel linear paths while the articles are held in the tipped position as they roll over the indicia, said movement in parallel linear paths producing slippage between the surfaces of the articles and the decals.

4,239,571

METHOD FOR MAKING A COMPOSITE STRUCTURE

A. Lawrence Cobb, Rochester, Mich., assignor to Composite Technology Corporation, Troy, Mich.

Filed Oct. 25, 1978, Ser. No. 954,704
Int. Cl.³ B32B *31/12, 31/20*
U.S. Cl. 156—196 **5 Claims**



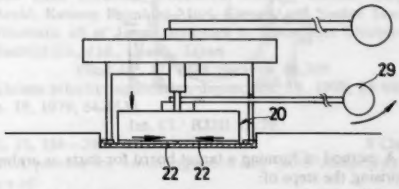
1. The method of forming a composite structure comprising providing a first layer of open-cell, resilient foam material, impregnating said first foam layer with a first thermosetting resin system, providing a second layer of open-cell foam material, impregnating said second foam layer with a second thermosetting resin system, only said second resin system including a mold-release material incorporated therein, placing said first and second resin-impregnated foam layers in abutting relationship, overlaying each of the non-abutting surfaces of said respective foam layers with a layer of fibrous reinforcing material, providing a two-part mold, applying a mold-release material to the surface of one part of said two-part mold, applying a thermosetting gel coat over said mold-release material, placing the uncured and reinforced foam materials within the mold such that the second foam layer impregnated with the mold-release containing resin system is positioned adjacent the non-coated mold part and the first resin-impregnated foam layer is positioned adjacent the coated mold part, moving said mold parts toward each other so as to compress said foam layers whereby the open cells thereof are filled with their respective resin systems and curing said resin systems and gel coat while maintaining the foam layers in their compressed condition.

4,239,572

METHOD AND APPARATUS FOR FOLDING AND WELDING THE MARGINAL EDGES OF A COVER SHEET

Keiji Tomita, Tondabayashi, Japan, assignor to Kabushiki Kaisha Tomita Sangyo, Osaka, Japan

Filed Mar. 29, 1979, Ser. No. 25,145
Int. Cl.³ B32B *3/04*; B31B *1/52*
U.S. Cl. 156—227 **7 Claims**



1. Apparatus for folding the marginal edges of a sheet material upon itself, said apparatus comprising:

a table means having a recess therein over which a sheet material may be placed;
an edge erecting means having a plurality of horizontally movable erecting frames;
an edge folding means having a plurality of horizontally movable folding frames;
resilient connection means for resiliently connecting said edge folding means to said edge erecting means, said connecting means supporting said edge erecting means above said recess; and,
means for moving said edge folding means and said edge erecting means vertically.

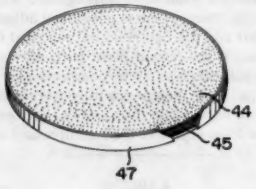
6. A method for folding the marginal edges of a sheet material upon itself said method comprising the steps of:
providing a table with a recess therein;
disposing said sheet material over said recess;
lowering a set of erecting frames into said recess until said erecting frames press said sheet material against the bottom of said recess;
horizontally extending said erecting frames to press said sheet material against lateral edges of said recess to vertically erect the marginal edges of said sheet material;
lowering a set of folding frames onto the surface of said table adjacent said recess;
drawing said folding frames inwardly toward said recess to fold said erected marginal edges horizontally; and,
drawing said erecting frames inwardly while said folding frames are still in contact with said folded marginal edges whereby said folded marginal edges are brought into surface contact with the unfolded portion of said sheet material.

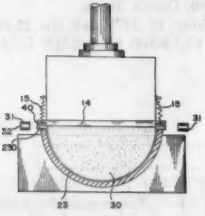
4,239,573

METHOD AND EQUIPMENT FOR MANUFACTURE OF TARGET BOARDS FOR DARTS OR ARCHERY

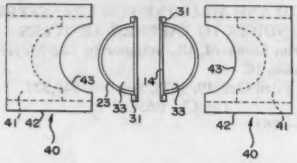
Edward W. J. Wu, 62, Wu Chuan Si Er St.,, Taichung, Taiwan

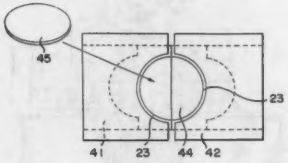
Filed Apr. 30, 1979, Ser. No. 34,753
Int. Cl.[3] **B29C** *19/00, 9/00;* **A63B** *63/00;* **B32B** *3/02*
U.S. Cl. 156—245 **1 Claim**

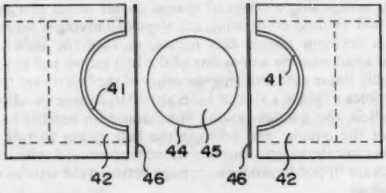




1. A method of forming a target board for darts or archery comprising the steps of:
providing a planar upper mold face with a plurality of straight grooves, said grooves being equally spaced at a pitch equal to the thickness of a target board;
providing an arcuate lower mold face with a plurality of arcuate grooves which correspond in position and pitch with said straight grooves;
placing an upper clamp member in each of said straight grooves;
releasably attaching said upper clamp members to said upper mold face;
placing a lower clamp member in each of said arcuate grooves;
placing a bunch of hemp fibers on said arcuate lower mold face;
forcing said upper mold face toward said lower mold face and tightly pressing said bunch of hemp fibers into a tightly pressed hemp bundle;
detaching said upper clamp members from said upper mold face;
releasably coupling each of said upper clamp members to a corresponding one of said lower clamp members to maintain said hemp fibers tightly pressed together;







moving said upper mold face away from said hemp bundle;
removing said hemp bundle and clamp members from said lower mold face with said clamp members remaining on said bundle;
cutting said hemp bundle between said clamp members and forming a plurality of clamped semi-circular board pieces;
placing each of a pair of clamped board pieces in a mold with a planar portion of each piece facing a planar portion of the other piece;
forcing said pair of pieces together to form a circular board having a pair of planar faces;
decoupling said clamp members on each piece;
removing said decoupled clamp members from each piece of said pair of pieces;
increasing the pressure pressing said pieces of said pair of pieces together;
applying adhesive to one of said board planar faces;
adhering a reinforcing plate to said one board planar face while said board remains under pressure;

releasing said board;
placing a pair of ring members adjacent the circular periphery of said board;
forcing said ring members around said board periphery;
securing said ring members together to form a protective ring around the outer periphery of said board; and
placing decoration on said reinforcing plate.

4,239,574

PROCESS AND APPARATUS FOR THE WELDING OF SYNTHETIC RESIN STRUCTURES

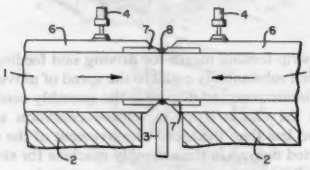
Heinrich Aust, Hennef; Wolfgang Budich, Troisdorf-Sieglar; Heinz Nowak, Siegburg, and Franz Primessing, Niederkassel-Mondorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Fed. Rep. of Germany

Continuation of Ser. No. 682,199, May 3, 1976, abandoned, which is a continuation-in-part of Ser. No. 449,344, Mar. 8, 1974, abandoned. This application Mar. 7, 1978, Ser. No. 884,239

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1973, 2312362

Int. Cl.[2] **B29C** *27/06*

U.S. Cl. 156—267 **22 Claims**



1. In a process for welding end faces of synthetic resin profile elements together, wherein in step (a) the end faces of the profile elements to be welded together are heated by being brought into contact with a heating plate until initial melting occurs; in step (b) the heating plate is removed from between the end faces and the softened end faces are pressed together to form a weld seam and in step (c) a weld bead formed when said end faces are pressed together is removed, the improvement wherein during steps (a) and (b) each profile element is positioned between and guided by at least two wedge-like converging guide rail means that engage the profile element on at least two opposing outside surfaces thereof, each guide rail means including a leading edge that is parallel to and spaced from the end faces of the profile elements to be welded whereby a melting zone is left vacant and the weld bead formation is restricted to a minimum space so that the weld bead formation can be removed in step (c) while said profile elements are still in the warm condition; the end faces of said profile elements are pressed together in step (b) until the leading edges of the guide rail means almost contact one another whereby a portion of the weld bead formation is trimmed off and during step (c) the remaining portion of the weld bead formation is removed while said profile elements are positioned between said guide rail means by moving a scraper means transversely across the leading edges of said guide rail means while the profile elements are still in the warm condition.

20. An auxiliary apparatus for a welding machine for welding together and for removal of a weld bead formation of synthetic resin profile elements coated with a cover layer of thermoplastic material, wherein said auxiliary apparatus includes a heating plate, and displaceable guide means at least partially encompassing the profile elements and extending into close proximity to the end faces of the profile elements to be welded together, said guide means being displaceable relative to one another such that the end faces of the profile elements to be welded are contacted with said heating plate to effect melting thereof, the heating plate is moved from between the end faces and the guide means are further displaced to compress the profile elements together to cause the formation of a weld seam and a weld bead, and wherein each guide means comprises at least two wedge-shaped converging guide rails for engaging the profile elements on at least two opposing outside surfaces thereof, each guide rail including a leading edge that is parallel to and spaced from the end faces of the profile elements to be welded whereby a welding zone is left vacant and the welding bead formation is restricted to a minimum space by the external guide rails preventing further transmission of heat and compression of said profile elements so that the weld bead formation can be removed while said profile elements are still in the warm condition; the guide means being displaceable towards each other to press the end faces of said profile elements together until the leading edges of the guide rails almost contact one another and a portion of the weld bead formation is trimmed off and said guide means being maintained at a stationary position while the remaining portion of the weld bead formation is removed by a scraper means while said profile elements are positioned in the warm condition between said guide means whereby said cover layers provide a continuous coating in the zone of the weld seam.

4,239,575

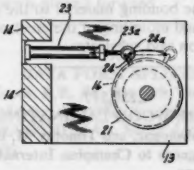
METHOD AND APPARATUS FOR MOVEMENT OF HEATED THERMOPLASTIC ELEMENTS FOR SHEAR-FUSION BONDING OF SUCH THERMOPLASTIC ELEMENTS

Alfred F. Leatherman, Columbus, Ohio, assignor to William C. Heller, Jr., Milwaukee, Wis.

Filed Oct. 26, 1978, Ser. No. 955,142

Int. Cl.[3] **B29C** *9/02*

U.S. Cl. 156—272 **32 Claims**



1. A method of fusion bonding plastic elements over extended interface surfaces, comprising heating the interface material to a fusion bonding temperature from a separate thermal energy source and thereby softening the interface material of said plastic elements independently of movement of said elements, subjecting the softened interface material to a high rate shear force movement in the plane of the interface to lower the viscosity of the interface material and cause said interface material to bondably flow, said shear force movement being insufficient to establish significant heating of said interface, and holding the interface surfaces while in the flowing state in firm engagement to create a fusion bond.

4,239,576

PROCESS FOR MOUNTING ELECTRONIC PARTS

Yasuo Taki, Hirakata; Yoshihiko Misawa, Katano; Shigeru Araki, Katano; Kazuhiro Mori, Katano, and Souhei Tanaka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 17, 1979, Ser. No. 58,319

Claims priority, application Japan, Jul. 19, 1978, 53-88833; Jan. 18, 1979, 54-4530

Int. Cl.[3] **B32B** *31/26*

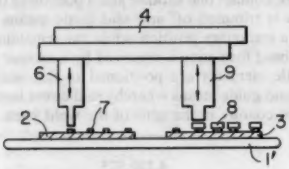
U.S. Cl. 156—297 **5 Claims**

1. A process for mounting electronic parts comprising the steps of:
preparing a plurality of substrates on each of which a plurality of electronic parts are to be mounted;
disposing said substrates on first movable means in a relation

in which said substrates are maintained in predetermined relative positions;

disposing dispenser means for dispensing a bonding material for bonding the electronic parts to each of said substrates and mounting means for mounting the electronic parts on each of said substrates, on second movable means in a relation in which said dispenser means and said mounting means are maintained in the same relative positions as those of said substrates on said first movable means;

moving said second movable means relative to said first movable means according to a predetermined program while actuating said dispenser means and said mounting means, thereby dispensing the bonding material from said



dispenser means to predetermined points on the substrate positioned relative to said dispenser means, while, at the same time, mounting the electronic parts by said mounting means at predetermined positions on the substrate positioned relative to said mounting means;

subsequently transferring said first-mentioned substrate from the position associated with said dispenser means to the position associated with said mounting means by said first movable means; and

repeating the above steps thereby sequentially carrying out dispensing of the bonding material to the same points on said substrates and mounting of the electronic parts at the same positions on said substrates.

4,239,577

HIGH MOISTURE WOOD LAMINATING PROCESS

Seymour Hartman, Mahopac, and Timothy M. Brown, Holmes, both of N.Y., assignors to Champion International Corporation, Stamford, Conn.

Filed Apr. 9, 1979, Ser. No. 28,234

Int. Cl.³ B32B *31/20, 21/08, 5/14*

U.S. Cl. 156—312 **10 Claims**

1. A process for making wood laminates from a plurality of wood plies which comprises:

(a) providing two surface plies having a moisture content of from 7 to 25% based on the dry weight of the wood;

(b) providing a center ply having a moisture content which is at least 1% and which is less than the moisture content of the surface plies;

(c) applying an adhesive to the mating surfaces of the plies;

(d) assembling a panel of the plurality of wood plies by mating the surfaces to which the adhesive has been applied; and

(e) pressing the assembled plies under conditions of pressure, temperature and time effective to cure the adhesive.

4,239,578

APPARATUS FOR INSERTING ELASTIC STRIPS DURING THE MANUFACTURE OF ELASTIC LEG DISPOSABLE DIAPERS

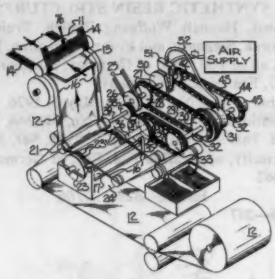
Graves T. Gore, Aiken, S.C., assignor to Riegel Textile Corporation, Greenville, S.C.

Filed Oct. 16, 1979, Ser. No. 85,382

Int. Cl.³ B65H *25/00*

U.S. Cl. 156—361 **5 Claims**

1. In an apparatus for attaching elastic strips in elastic leg disposable diapers having gathered and extendible side portions in the crotch area during the manufacture of such diapers in moving serially-interconnected form in an assembly machine and including means for feeding continuous elastic strips into desired position in the diaper for adhesive attachment therein and means for alternately stretching and relaxing predetermined lengths of the elastic strips during the feeding thereof for attaching the stretched lengths to the crotch area and the substantially relaxed lengths to the outer waist areas continuously along the longitudinal edges of the diapers; the improvement of said means for alternately stretching and relaxing predetermined lengths of the continuous elastic strips comprising: selectively variable drive means connected with



said elastic strip feeding means for driving said feeding means at a first speed substantially equal to the speed of movement of the serially-interconnected diapers in the assembly machine for maintaining the elastic strips in relaxed condition and at a second speed less than the speed of movement of the serially-interconnected diapers in the assembly machine for stretching the elastic strips; and control means operatively connected with said drive means for alternately actuating said drive means for the first and second speeds of feed of the elastic strips for alternately stretching and relaxing predetermined lengths of the elastic strips.

4,239,579

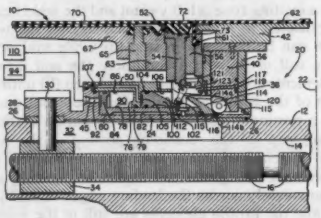
TIRE BUILDING DRUM

Gilbert A. Felten, Kehlen, Luxembourg, and Jean-Marc Dupommier, Athus, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 25, 1979, Ser. No. 42,399

Int. Cl.³ B29H *17/16, 17/22*

U.S. Cl. 156—398 **10 Claims**



1. A tire building drum having a center shaft and including a center membrane and an inflatable turn-up bladder having an elastic nose ring formed integrally thereof in close axially fixed relation to an associated end of the center membrane to form a flat cylindrical building surface; a rigid drum end assembly including a mounting sleeve mounted coaxially on and slidable along the center shaft; bead seating means arranged coaxially of and spaced circumferentially around said sleeve and mounted in said assembly to expand said elastic nose ring radially of the shaft; drum shoulder forming means mounted in said assembly for movement radially of the shaft to expand said associated end of the center membrane adjacent to said elastic

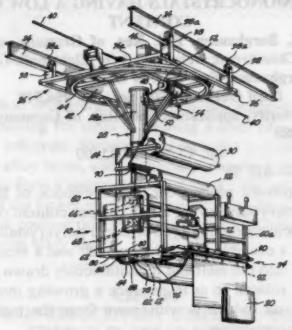
nose ring; first means disposed coaxially of and around said sleeve for movement axially thereof to effect uniform radially outward force and movement of one of said bead seating means and said drum shoulder forming means independently of the other thereof; and second means disposed coaxially of and around said sleeve for movement axially thereof to effect uniform radially outward force and movement of the other of said bead seating means and drum shoulder means independently of said one thereof.

4,239,580

IMPREGNATED FABRIC APPLICATOR WITH VIBRATING APPLICATOR ROLLS

Frank E. Ives, 2402 M St. N.E., Auburn, Wash. 98002

Filed Jul. 31, 1978, Ser. No. 929,779
Int. Cl.³ B29C *27/22;* **B21B** *13/02*
U.S. Cl. 156—468 **12 Claims**



1. An apparatus for applying a liquid saturated fabric to a surface comprising:

a frame including means for holding and dispensing a roll of fabric, impregnating means for saturating said fabric with a liquid, and means for dispensing said fabric from said roll of fabric to said impregnating means,

a subframe, and a first set of generally axially aligned applicator rolls, and first mounting means for mounting said applicator rolls for rotational movement on said subframe, said applicator rolls being serially coupled to each other and to said subframe by flexible axles generally coaxially aligned with said applicator rolls, said flexible axles allowing said applicator rolls to move transversely relative to the axes of said applicator rolls,

second mounting means for mounting said subframe on said frame for swinging movement about an axis generally parallel to the axes of said applicator rolls, said applicator rolls being adapted to receive said fabric from said impregnating means and being adapted to apply said fabric to said surface as said frame moves relative to said surface, and

means affixed directly to each of said applicator rolls for vibrating said applicator rolls in a direction transverse to the axes of said applicator rolls.

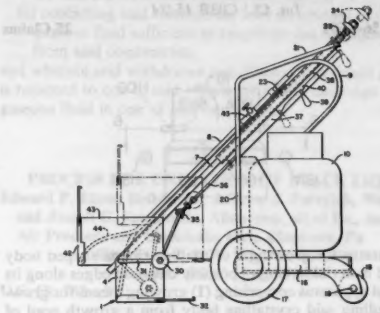
4,239,581

APPARATUS FOR SEALING LAP JOINTS OF FUSIBLE ROOFING SHEETS

John N. Lang, 46 Allpark Ave., Pittsburgh, Pa. 15216

Filed Apr. 23, 1979, Ser. No. 32,352
Int. Cl.³ B32B *31/00, 31/12;* **B29C** *25/00;* **F23C** *5/00*
U.S. Cl. 156—497 **8 Claims**

1. Apparatus for sealing lap joints of fusible roofing sheets, said apparatus comprising a burner provided with a flame chamber formed by substantially flat upper and lower walls connected by side walls and a front end wall, the flame chamber having a forwardly located fuel inlet and an open rear end, a conduit for connecting said inlet to a fuel source, means connected to one side of the burner for inserting it between the overlapping layers of a lap joint and for sliding it forward along the joint while flame heats said upper and lower walls and issues from the rear end of said chamber to fuse said overlapping layers together, hold-down means extending transversely of said upper wall and spaced above it when in inoperative position for receiving the upper layer of a lap joint between the hold-down means and said upper wall, and manually operable means for lowering said hold-down means into operating position directly above said upper wall and in close proximity thereto for engaging the upper surface of the upper layer of a lap joint and holding that layer down on the upper wall as the burner is moved forward.

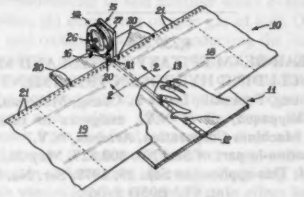


4,239,582

DATA FORM SPLICER

Thomas F. McGrath, R.R. #1, Box 259, Tinley Park, Ill. 60477

Filed Mar. 28, 1980, Ser. No. 134,779
Int. Cl.³ G03D *15/04;* **B65H** *21/00, 69/06*
U.S. Cl. 156—505 **4 Claims**



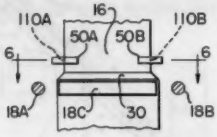
1. Apparatus for splicing computer print out data forms and the like having a plurality of spaced openings punched along a margin thereof comprising: a planar staging table having an upper work surface formed with an elongated groove recessed inwardly of and extending across said work surface; said groove having a planar bottom and marginal portions overhanging lateral margins of said bottom for holding a length of splicing tape having adhesive coating over one surface in said groove with its adhesive coating facing upwardly; tape supply means located over one end of said slotted groove whereby said tape may be manually fed into one end of said groove; means adjacent said supply means for severing said tape, spaced locating means extending upwardly from said work surface for engaging spaced openings in said data form margins to locate the same on said work surface such that adjacently opposed edges thereof are disposed centrally over the longitudinal axis of said groove whereby a length of tape located in the bottom of said groove may be adhered to the data form portions located thereover by pressing such form portions downwardly onto said tape's adhesive surface.

4,239,583

METHOD AND APPARATUS FOR CRYSTAL GROWTH CONTROL

Arthur E. Hatch, Waltham, and Douglas A. Yates, Burlington, both of Mass., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Continuation of Ser. No. 798,456, May 19, 1977. This application Jun. 7, 1979, Ser. No. 46,552
Int. Cl.[3] C03B *15/34*
U.S. Cl. 156—601 25 Claims



1. Apparatus for growing a crystalline ribbon-shaped body of selected material having oppositely disposed edges along its length, said apparatus comprising (1) growing means for growing and pulling said crystalline body from a growth pool of melt supplied by a capillary die, said growing means including first and second heater means for selectively providing heat to the respective portions of said growth pool adjacent said edges of said body, and (2) means for replenishing said growth pool with melt provided from a reservoir supply of melt, said growth pool being characterized by a meniscus which joins said body above said capillary die at a solid/liquid interface, said apparatus further comprising:

means for observing at least a portion of said body above said meniscus at each of said oppositely disposed edges against a contrasting background, and

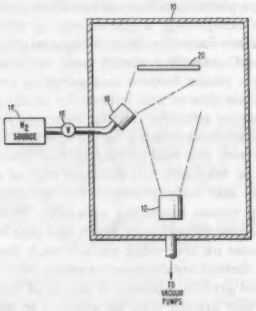
control means for independently maintaining each of said observed portions of said edges at a select spatial position with respect to a predetermined reference position as well as to each other, said control means including means for selectively controlling said first and second heater means so as to control the temperature of the portion of said growth pool of melt adjacent each of said edges.

4,239,584

MOLECULAR-BEAM EPITAXY SYSTEM AND METHOD INCLUDING HYDROGEN TREATMENT

Chin-An Chang, Peekskill; Leroy L. Chang, Mohegan, and Leo Esaki, Chappaqua, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 800,827, May 26, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 947,912
Int. Cl.[3] B05D *3/06*
U.S. Cl. 156—612 2 Claims



1. In a molecular-beam epitaxy process for the epitaxial growth of compound semiconductor films in an enclosed vacuum chamber including at least one source material selected from the group comprising gallium, arsenic, aluminum and tin, and a substrate on which the source material is epitaxially grown, the improvement comprising the steps of providing a source of hydrogen, and the step of introducing a controlled relatively low volume of said hydrogen from said hydrogen source through a control valve into said vacuum chamber while said source material is being epitaxially grown on said substrate for changing the physical properties of the surface of said epitaxially grown material on said substrate by combining with and removing any oxygen present on the surface of said epitaxially grown material on said substrate for increasing the adsorption properties of said epitaxially grown material.

4,239,585

PROCESS FOR THE PRODUCTION OF HIGH PURITY SILICON MONOCRYSTALS HAVING A LOW OXYGEN CONTENT

Franz Köhl, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 954,518
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758888
Int. Cl.[3] C30B *15/00*
U.S. Cl. 156—617 SP 3 Claims

1. An improved process for the production of high purity silicon monocrystals having a low oxygen content of the Czochralski crucible-drawing type wherein polycrystalline silicon is melted in a crucible to produce a melt and a seed crystal is then dipped into the melt and is continuously drawn therefrom while being rotated so as to produce a growing monocrystalline silicon rod, which is withdrawn from the melt, the improvement comprising:

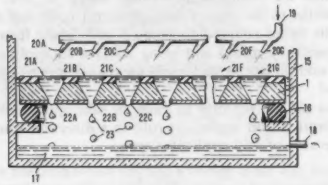
initially withdrawing the crystallized silicon rod from the melt while rotating said rod at a speed within the range of from 3 to 6 rev/min and increasing the rotational speed by 0.5 to 2 rev/min per 10 cm of crystallized silicon rod.

4,239,586

ETCHING OF MULTIPLE HOLES OF UNIFORM SIZE

Richard A. Ghez, Millwood; John B. Gunn, Mt. Kisco, both of N.Y.; Robert Hammer, Brookfield Center, Conn., and James A. Van Vechten, Millwood, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,490
Int. Cl.[3] H01L *21/306*
U.S. Cl. 156—644 6 Claims



1. In the fabrication of one or more holes passing through a substrate, each hole having at least one specific dimension intended to be closely controlled by the technique of etching said substrate with an etching agent having a meniscus extending across the hole, the improvement comprising:

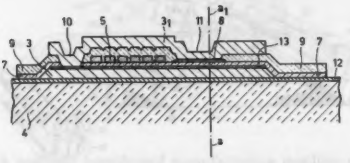
providing an interdependent relationship between the force on said meniscus and the surface tension of a fluid, said relationship being operable to terminate etching by removal of etchant from each hole when the hole is etched to said particular dimension.

4,239,587

METHOD OF MANUFACTURING A THIN-FILM MAGNETIC HEAD WITH A NICKEL-IRON PATTERN HAVING INCLINED EDGES

Gerrit J. Koel, and Lambertus Postma, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,685
Claims priority, application Netherlands, Aug. 29, 1977, 7709481
Int. Cl.³ C23F 1/02
U.S. Cl. 156—659.1 3 Claims



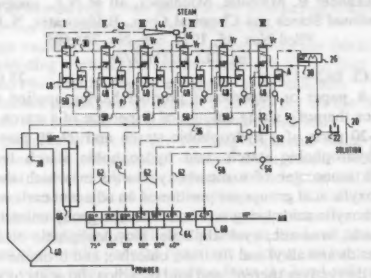
1. A method of manufacturing a thin-film magnetic head, the method including the steps of forming a layer of a nickel-iron alloy on a substrate, forming a photoresist pattern over the nickel-iron alloy layer, and chemically etching the nickel-iron layer so as to form a pattern having sloping sides, wherein a top thickness of the nickel-iron layer remote from the substrate has a higher iron content than the iron content of the remainder of the nickel-iron alloy layer.

4,239,588

METHOD OF EFFECTIVELY UTILIZING THERMAL ENERGY IN SPRAY DRYING

Joachim Engelhardt, Marxzell-Burbach, Fed. Rep. of Germany, assignor to Wiegand Karlsruhe GmbH, Ettlingen, Fed. Rep. of Germany

Continuation of Ser. No. 843,273, Oct. 18, 1977, abandoned. This application Mar. 27, 1979, Ser. No. 24,253
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1976, 2648219
Int. Cl.³ B01D 1/18, 1/26
U.S. Cl. 159—48 R 5 Claims



1. A method of effectively utilizing thermal energy supplied to a solution of a solid product in a volatile solvent which comprises:

(a) heating said solution in a multiple-effect evaporator by sequential heat exchange of said solution with a condensible gas in respective effects at different temperatures and pressures to convert said gas to a liquid phase, and to convert a portion of said solvent to a gaseous phase in each effect until a liquid concentrate is formed from said solution;

(b) separately withdrawing respective portions of one of said phases from each of at least two of said effects;

(c) passing a gaseous fluid sequentially through at least two stages of a heating arrangement having a plurality of stages;

(d) heating said gaseous fluid in said at least two stages by heat exchange with the portions of the phases respectively withdrawn from said at least two effects;

(e) contacting said concentrate with an amount of the heated gaseous fluid sufficient to evaporate the remaining solvent from said concentrate;

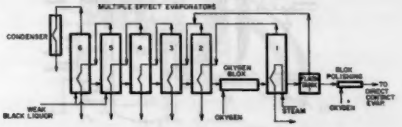
and wherein said withdrawn one phase is said liquid phase and is returned to one of said effects after heat exchange with said gaseous fluid in one of said two stages.

4,239,589

PROCESS FOR OXIDATION OF BLACK LIQUOR

Edward F. Elton, Bethlehem; Andrew J. Patrylak, Wescosville, and Joseph G. Santangelo, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 2, 1978, Ser. No. 947,802
Int. Cl.³ D21C 11/10, 11/14
U.S. Cl. 162—31 13 Claims



1. In the oxidation of black liquor obtained from wood pulping with sulfur-containing compounds in a system employing multiple effect evaporation for concentration of such liquor, the improvement which comprises utilizing the heat evolved in the oxidation reaction to reduce the external heat requirement for evaporation of the black liquor supplied to such evaporation, such reduction in external heat requirement being effected by (a) subjecting the total sulfur content of the black liquor introduced to said multiple effect evaporation to such oxidation, (b) employing oxygen gas of high O_2 concentration for said oxidation, and (c) conducting the oxidation at superatmospheric pressure during a stage of black liquor flow through the multiple effect evaporation or immediately subsequent to the final evaporation stage in the direction of liquor flow through said multiple effect evaporation; flashing the oxidized liquor from said final evaporating stage and returning the flashed vapors to the multiple effect evaporation to augment heating in at least one effect by combining the flashed vapors with vapors leaving an evaporation effect located upstream of the oxidation stage in the direction of black liquor flow, said evaporation effect being operated at higher pressure than that of the effect into which the black liquor is first introduced.

4,239,590

METHOD OF MAINTAINING UNIFORMITY OF FIBROUS MATERIAL FED TO A CONTINUOUS DIGESTER

James R. Prough, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

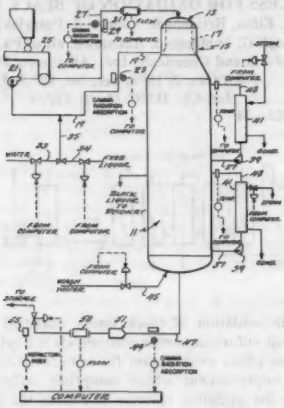
Division of Ser. No. 815,200, Jul. 12, 1977, Pat. No. 4,146,422 which is a continuation of Ser. No. 717,390, Aug. 24, 1976, abandoned, which is a continuation of Ser. No. 526,064, Nov. 21, 1974, which is a continuation of Ser. No. 320,827, Jan. 3, 1973.
This application Jan. 11, 1979, Ser. No. 2,762
Int. Cl.³ D21C 7/12; D21F 1/08
U.S. Cl. 162—49 1 Claim

1. A method of maintaining uniformity of the amount of cellulosic fibrous material fed to a continuous pulp digester in

a feeding process in which the material is continuously introduced into a liquid to form a liquid-material slurry which is continuously conveyed to the inlet end of the continuous digester where the material is continuously separated from the main body of the liquid and continuously deposited into the digester inlet while the separated liquid is continuously recirculated to form a part of the slurry, said method comprising the steps of

continuously measuring the gamma radiation absorption of the slurry so as to derive continuous measurements which are a function of any continuous variations in the combined densities of the material and the liquid of the slurry resulting from (1) continuous variations in the amount of material in the slurry alone, or (2) continuous variations in the density of liquid portion thereof alone, or (3) continuous variations in both (1) and (2);

continuously measuring the total flow of the slurry;



continuously measuring the gamma radiation absorption of the recirculated liquid so as to derive continuous measurements which are a function of any continuous variation in the density of the liquid of the slurry;

utilizing the continuous gamma radiation absorption measurements of the recirculated liquid and the flow measurement of the slurry to compensate for variations in the continuous gamma radiation absorption measurements of the slurry resulting from variations in the density of the liquid of the slurry to thereby obtain a continuous indication of any variation in the amount of material in the slurry; and

utilizing the continuous indication of any variation in the amount of material in the slurry to change the amount of material in the slurry in a manner tending to make the amount of material in the slurry uniform.

4,239,591

MANUFACTURE OF AN NON-LAMINATED PAPER WEB HAVING REGIONS OF INCREASED THICKNESS

David R. Blake, 11200 Killarney, Onsted, Mich. 49265

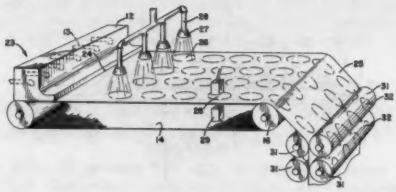
Filed Oct. 19, 1978, Ser. No. 952,624

Int. Cl.³ D21H *5/02*; D21F *1/00*

U.S. Cl. 162—109 **7 Claims**

1. An improvement in a papermaking machine of the fourdrinier type including means for flowing a quantity of pulp stock onto an endless forming screen positioned therebelow to produce a paper web of substantially uniform thickness, said improvement comprising at least one spraying head spaced from the web in the web forming area, means for supplying pulp to said at least one spraying head, said at least one spraying head being directed toward said web to spray additional quantities of pulp stock onto the uniform thickness web, and means to periodically interrupt the deposition of additional pulp stock by said spraying head to create a plurality of isolated regions of increased thickness corresponding to said at least one spraying head integral with the paper web, and roller means downstream from said web forming area for compressing said web to form a paper sheet, said roller means comprising a web-engaging surface comformable with said region of increased thickness to form a paper sheet having a corresponding region of increased thickness.

6. A papermaking process comprising the steps of flowing a quantity of pulp stock onto an endless forming screen to form



a paper web of substantially uniform thickness, periodically spraying additional quantities of pulp stock from at least one sprayhead onto the web in the web forming area to form isolated regions of increased thickness corresponding to the deposition of pulp from said at least one sprayhead, said thickened regions forming an integral part of said web, and compressing said web with roller means downstream of said web forming area to form a paper sheet, said roller means comprising a web-engaging surface conformable with said region of increased thickness.

4,239,592

STARCH BLEND, PROCESS OF SIZING PAPER THEREWITH, AND PRODUCT THEREOF

Lawrence A. Gaspar, Lebanon; Martin Tessler, Edison, and Alexander R. Malcolm, Middlesex, all of N.J., assignors to National Starch and Chemical Corp., Bridgewater, N.J.

Filed Nov. 15, 1976, Ser. No. 741,605

Int. Cl.³ D21H *3/28*

U.S. Cl. 162—175 **23 Claims**

1. A paper or paperboard product having applied to the surface thereof a sizing amount of dispersion of a starch blend of 1–20 parts of a hydrophobic starch and 99–80 parts of a non-hydrophobic starch, said hydrophobic starch being a starch monoester of a dicarboxylic acid in which the two carboxylic acid groups are positioned on adjacent carbons, said dicarboxylic acids being selected from the group consisting of aliphatic, aromatic, cycloaliphatic, bicycloaliphatic dicarboxylic acids and alkyl and fluorine, chlorine, and bromine substituted derivatives thereof; and said dicarboxylic acids or substituted dicarboxylic acids have a total of 8–22 carbon atoms.

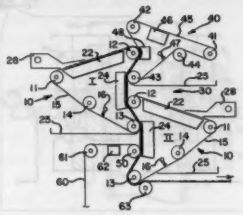
18. A starch blend comprising 1–20 parts of a hydrophobic starch and 99–80 parts of a non-hydrophobic starch, said hydrophobic starch being a starch monoester of a dicarboxylic acid in which the two carboxylic acid groups are positioned on adjacent carbons, said dicarboxylic acids selected from the group consisting of aliphatic, aromatic, cycloaliphatic, bicycloaliphatic dicarboxylic acids and alkyl and fluorine, chlorine and bromine substituted derivatives thereof; and said dicarboxylic acids or substituted dicarboxylic acids have a total of 8–22 carbon atoms.

4,239,593

MULTIPLY PAPERBOARD MACHINE

Earl W. Dunsmoor, Jr., Manhattan Beach, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 22, 1979, Ser. No. 5,135
Int. Cl.[3] D21F 1/00
U.S. Cl. 162—303 6 Claims



1. A multiply paperboard manufacturing machine comprising:

A. a top fibrous ply holding and wet pressing unit having:

four horizontally positioned spaced-apart rolls equally spaced from a vertical plane normal to the axes of the rolls, with said rolls being a tail roll, head roll, foot roll and guide roll, parallel to each other,

a fibrous ply forming endless fabric belt wound over the four rolls,

the run of fabric belt between the head roll and the tail roll being inclined,

a vacuum box beneath a run of the fabric belt extending from the tail roll to the head roll, and

a high vacuum box behind a run of the fabric belt extending from the head roll to the foot roll;

B. a plurality of fibrous ply forming apparatus, with each such apparatus comprising:

four horizontally positioned spaced-apart rolls equally spaced from a vertical plane normal to the axes of the rolls, with said rolls being a tail roll, head roll, foot roll and guide roll, parallel to each other,

a fibrous ply forming endless fabric belt wound over the four rolls,

the run of fabric between the head roll and the tail roll being inclined,

a low-vacuum box beneath a run of the fabric belt extending from the tail roll to the head roll for dewatering a forming fibrous ply deposited on said fabric run,

a high-vacuum box behind a front face run of the fabric belt extending vertically from the head roll to the foot roll, said run constituting an apparatus front face, and

a headbox positioned to deposit a fibrous ply on the fabric belt run between the tail roll and the head roll;

the plurality of fibrous ply forming apparatus being positioned in a substantially vertical arrangement with the front face of every other apparatus fronting on, and being on, the same side of a vertical line;

the vertically an uppermost forming apparatus for a first fibrous ply being positioned to have its head roll opposite and close to the vacuum box of the holding unit behind the run of the fabric belt extending from the head roll to the foot roll of the holding unit;

the head roll of the second and subsequent ply forming apparatus being positioned opposite and close to the lower portion of the high-vacuum box of the next higher fibrous ply forming apparatus;

the foot roll of each fibrous ply forming apparatus, except the lowermost apparatus, being positioned opposite and close to the upper portion of the high-vacuum box of the next lower fibrous ply forming apparatus; and

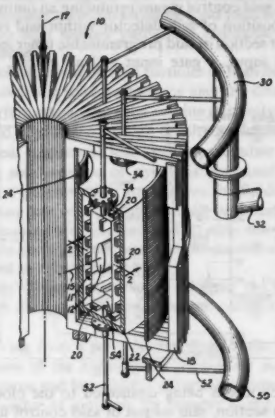
C. a bottom pressure roll opposite and close to the lower portion of the high-vacuum box of the lowermost fibrous ply forming apparatus.

4,239,594

CONTROL OF IMPURITIES IN TOROIDAL PLASMA DEVICES

Tihiro Ohkawa, La Jolla, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 29, 1975, Ser. No. 608,985
Int. Cl.[2] G21B 1/00
U.S. Cl. 176—9 2 Claims



1. Toroidal plasma confinement apparatus having a positive ion toroidal magnetic drift in a direction along the major toroidal axis including means for the control of impurity flow into a hydrogen plasma comprising means for providing a toroidal magnetic field in which the plasma is embedded, means for providing a toroidal current in the plasma and for generating a poloidal magnetic field in which the plasma is embedded, means for providing an axisymmetric source of hydrogen in a minor azimuthal zone adjacent the plasma and displaced from the plasma in a direction along the major toroidal axis opposite the direction of positive ion toroidal drift, and an axisymmetric particle sink in a minor azimuthal zone adjacent the plasma and displaced from the plasma along the major toroidal axis in the direction of positive ion toroidal drift, the source strength of said axisymmetric source of hydrogen being at least

$$\frac{2}{eRB_{To}}\left(\frac{1}{n_i}\frac{\partial p_i}{\partial r}-\frac{1}{n_i Z_i}\frac{\partial p_I}{\partial r}\right)$$

particles per second for reversal of impurity flow such that said source replenishes protons lost from the plasma by the positive ion toroidal drift to eliminate circulation flow of impurity ions along the flux lines of the toroidal and poloidal magnetic fields which otherwise would result in net impurity influx into the plasma.

4,239,595

DATA SYSTEM FOR AUTOMATIC FLUX MAPPING APPLICATIONS

Robert M. Oates, Murrysville; James A. Neuner, Rich Land, both of Pa.; Robert D. Couch, Jr., Baltimore, and Alan M. Kasinoff, Pikesville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

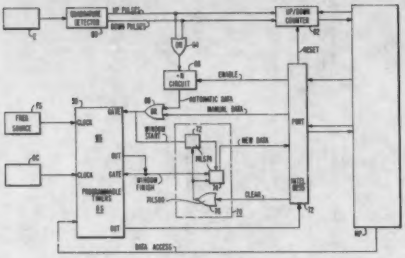
Filed Jan. 11, 1979, Ser. No. 2,630
Int. Cl.[3] G21C 17/00
U.S. Cl. 176—19 R 9 Claims

1. In a nuclear reactor flux mapping system including one or more neutron detectors operable to be driven into and out of

the reactor core along any one of a number of pre-established paths in response to a mechanical drive mechanism and drive control circuitry, said detector producing an electrical signal indicative of the neutron activity within the reactor core, the combination of;

a converter means for converting the electrical signal of a detector to a pulse rate indication of the measured neutron activity;

a data collection system including a control means and a programmable timer means having a first and second section, said control means producing an output indicative of the position of said detector within said reactor core, said first section of said programmable timer means having a clock input, a gate input and an output, a reference



frequency means being connected to the clock input of said first section, said output of said control means being connected to the gate input of said first section, said first section producing a data window output of a predetermined duration, said second section of said programmable timer means having a clock input and a gate input, said data window output of said first section being supplied as the gate input to said second section, said pulse rate output of said converter means being supplied as the clock input to said second section, said second section producing a measurement of neutron activity within said data window in accordance with the position of the detector within said reactor core, and

means connected to said second section to access said neutron activity measurement information.

4,239,596

PASSIVE RESIDUAL HEAT REMOVAL SYSTEM FOR NUCLEAR POWER PLANT

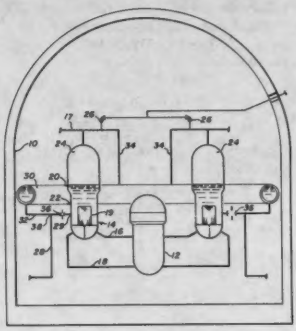
Frank Bevilacqua, Windsor; Vincent M. Callaghan, West Granby, both of Conn., and James L. Van Fleet, Tokyo, Japan, assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 16, 1977, Ser. No. 861,229
Int. Cl.[2] G21C *15/18*
U.S. Cl. 176—37 **9 Claims**

1. In a nuclear steam supply power plant having a pressurized water reactor in fluid communication with the primary tube side of a steam generator, the secondary shell side of which has a steam volume above a water volume, the water volume having upper and lower design level limits, the plant further including a normal feedwater supply line to the secondary side of the steam generator and a safety valve connected to the secondary side of the steam generator, a system for passively dissipating the residual heat of the reactor after a shutdown, comprising:

an enclosed reservoir located at an elevation at least that of the lower level limit and having a height substantially equal to the difference in elevation between the upper and lower level limits and having a predetermined volume chosen according to the amount of residual energy desired to be dissipated; and

means for passively and automatically supplying water under the force of gravity from said reservoir to the secondary side of the steam generator upon a loss of flow in



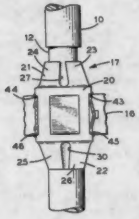
the normal feedwater line, whereby the steam generator water level is maintained between the level limits so long as there is water in said reservoir.

4,239,597

NUCLEAR FUEL SPACER GRID

David W. Christiansen, Kennewick, Wash., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 30, 1978, Ser. No. 891,792
Int. Cl.[2] G21C *3/30*
U.S. Cl. 176—78 **5 Claims**



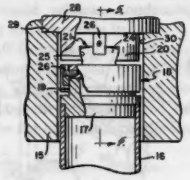
1. In a nuclear fuel assembly structure of the type having a plurality of fuel elements transversely separated by a fuel element spacer grid, the improvement comprising a tubular structural support for the fuel assembly, the tubular structural support having a longitudinal axis, a smooth outer surface free from protuberances, and a recessed intermediate surface formed in a portion of the outer surface of the tubular structural support, the recessed intermediate surface having longitudinally spaced flanges, said flanges connecting the smooth outer surface to the recessed intermediate surface, a spacer grid retainer generally enclosing at least a portion of the recessed intermediate surface between the longitudinally spaced flanges, said spacer grid retainer having a plurality of detents thereupon for engaging said spacer grid, and a plurality of resilient slotted fingers on the spacer grid retainer, the fingers protruding from the retainer into the recessed intermediate surface formed in the smooth outer surface of the tubular structural support in order to bear against the recessed intermediate surface and to selectively engage the flanges, said spacer grid retainer being secured at a predetermined position relative to the tubular structural support determined by the engagement of the fingers with the recessed intermediate surface of the tubular support structure.

4,239,598

NUCLEAR REACTOR HEAT TRANSPORT SYSTEM COMPONENT LOW FRICTION SUPPORT SYSTEM

Elman E. Wade, Ruffs Dale, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 31, 1978, Ser. No. 956,319
Int. Cl.[3] G21C *13/04*
U.S. Cl. 176—87 7 Claims



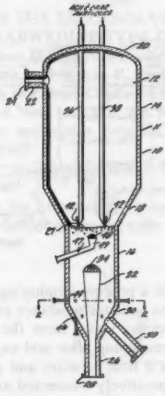
1. A support column capable of limited lateral deflection upon application of a limited orthogonal force to the top thereof comprising an elongated pipe, means establishing two longitudinally displaced curved surfaces constituting part of the surfaces of two large diameter horizontal cylinders having horizontal axes of curvature intersecting at right angles, said curved surfaces extending horizontally across the column at top and bottom of the column, and means establishing two longitudinally displaced, plane, horizontal surfaces at top and at bottom of column, said curved cylindrical surfaces bearing on the plane, horizontal surfaces.

4,239,599

PROCESS FOR STRIPPING OIL FROM FLUIDIZED ASH AND CHAR PARTICLES TO PREPARE THE PARTICLES FOR DECARBONIZATION

Charles K. Choi, Claremont, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Division of Ser. No. 719,274, Aug. 31, 1976, Pat. No. 4,116,823, which is a continuation-in-part of Ser. No. 603,874, Aug. 11, 1975, abandoned. This application Aug. 23, 1978, Ser. No. 936,098
Int. Cl.[3] C10B *49/16, 53/02;* B09B *3/00*
U.S. Cl. 201—2.5 1 Claim



1. In a process for the pyrolysis of organic solid waste wherein a high density particulate inorganic heat source is combined with particulate organic solid waste and transported through a flash pyrolysis zone which yields from pyrolysis of the particulate organic solid waste, a low density particulate carbon containing solid residue of pyrolysis, pyrolytic oils and gases, which in admixture with the high density particulate inorganic heat source pass through at least one cyclone separator which separates particles of the high density particulate heat source and low density particulate carbon containing solid residue of pyrolysis with some entrained pyrolytic oil from the balance of the pyrolytic oils and gases, the steps of preparing separated particles of high density particulate heat source and low density particulate carbon containing solid residue of pyrolysis for feed to a decarbonization zone where the high density particulate inorganic heat source is heated and the low density particulate carbon containing solid residue of pyrolysis converted to high density particulate inorganic heat source which comprises:

(a) transferring the separated particles of high density particulate inorganic solid heat source and low density particulate carbon containing solid residue of pyrolysis to a fluidized bed of particles of high density particulate inorganic solid heat source and low density particulate carbon containing solid residue of pyrolysis contained in a vessel having a gas expansion zone above the fluidized bed;

(b) injecting jets of a gas horizontally and vertically at the lower end of the fluidized bed to strip the pyrolytic oil from the particles and maintain the particles of the fluidized bed in a fluidized state;

(c) passing the gas and stripped oil from the fluidized bed through the gas expansion zone and outwards of the vessel;

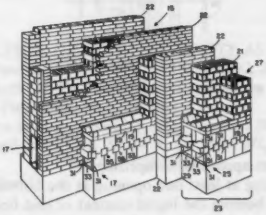
(d) removing from a point intermediate of the fluidized bed a mixture of the high density particulate inorganic solid heat source and low density particulate carbon containing solid residue of pyrolysis for transfer to the decarbonization zone.

4,239,600

TALL COKE OVEN SOLE FLUE

William D. Edgar, Allison Park, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jan. 30, 1980, Ser. No. 116,859
Int. Cl.[3] C10B *5/00, 29/02*
U.S. Cl. 202—138 10 Claims



1. In combination with a slot-type coke oven, a sole flue comprising:

(a) at least one floor liner of refractory material, positioned to form the bottom of a sole flue;

(b) a pair of side liner walls, each of which is composed of at least two vertical courses of refractory side liners, each said course of refractory side liners being composed of at least one refractory side liner, the lowermost portion of the lowermost course of said pair of side liner walls being maintained apart by said bottom of said sole flue;

(c) at least one rider tile, positioned to form the top of said sole flue, said at least one rider tile which includes means for maintaining uppermost portions of the uppermost course of said pair of side liner walls apart, to the same extent that said lowermost portions of said lowermost courses of said pair of side liner walls is maintained apart by said bottom of said sole flue, said at least one rider tile

including a plurality of ports for conducting gases therethrough; and

(d) refractory means for maintaining apart each of said pair of side liner walls from the other, and those portions of each successive course of said pair of side liner walls which are adjacent the horizontal joints which are created between each said successive courses of said pair of said side liner walls and which are also adjacent the vertical joints which are created between each two successive side liners in each said course of side liners, said means for maintaining apart operating to maintain apart those portions of said pair of side liner walls which are adjacent to both said horizontal joints and said vertical joints to the same extent that said lowermost course of said pair of side liner walls is maintained apart by said at least one floor liner.

4,239,601

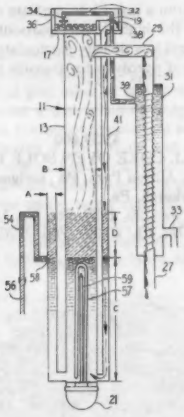
WATER DISTILLER WITH VOLATILE POLLUTANTS REMOVAL STAGE

Kenneth D. Lemoine, P.O. Box 476, Gravette, Ark. 72736

Continuation of Ser. No. 973,237, Dec. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 914,928, Jun. 12, 1978. This application Nov. 27, 1979, Ser. No. 97,820

Int. Cl.³ B01D *3/42*; C02F *1/04*

U.S. Cl. 202—176 **13 Claims**



1. Distillation apparatus comprising,

a boiler having at least one opening at the bottom thereof,

a heater for heating the liquid content of said boiler,

a vapor column in the form of a vertically elongated cylindrical chamber receiving vapor produced in said boiler,

a vapor column outlet near the top of said vapor column,

a condenser adjacent said column with a central vapor channel and a surrounding liquid cooling jacket having an inlet and an outlet, the top of said channel being connected to said vapor column outlet and the bottom of said channel having a distilled liquid outlet,

a container of substantial area open to the atmosphere having a surface in heat exchanging relation with the interior of said vapor column,

a conduit for liquid extending from the outlet of said jacket to the interior of said container,

means including an opening at the bottom of said container for conveying liquid from said container to said boiler,

an overflow tube connected to said opening at the bottom of said boiler and extending upward to an opening to the atmosphere above the desired level of liquid in said boiler,

and a downwardly extending drain conduit connected into said overflow tube at the vertical level of the minimum desired liquid level in said boiler.

4,239,602

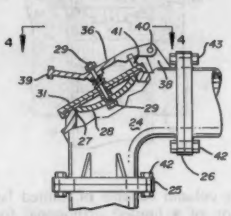
ASCENSION PIPE ELBOW LID FOR COKE OVENS

James B. La Bate, Beaver Falls, Pa., assignor to Insul Company, Inc., East Palestine, Ohio

Filed Jul. 23, 1979, Ser. No. 59,909

Int. Cl.³ C10B *27/00*

U.S. Cl. 202—242 **6 Claims**



1. An improved ascension pipe elbow for coke ovens wherein the elbow has an angularly disposed circular shoulder in an upper portion thereof defining a vent opening in said elbow, the improvement consisting of a lid, means on the elbow hinging the lid thereto for arcuate movement toward and away from said vent opening, an inverted dome-shaped circular baffle and means attaching said baffle to said lid, said baffle positioned for location through said vent opening and substantially within said ascension elbow when said lid is closed, an insulating gasket of refractory fibrous material positioned between said lid and said inverted dome-shaped baffle with the peripheral edge of said gasket normally engaged between said lid and said circular shoulder on the ascension elbow surrounding the vent opening therein so as to normally seal the same.

4,239,603

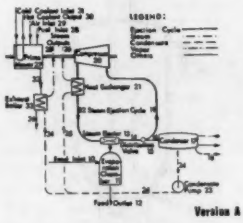
FUEL-EFFICIENT GENERATION OF EJECTING STEAM

Dan Egosi, 7 Ben Gurion Blvd., Tel Aviv, Israel

Filed Feb. 22, 1978, Ser. No. 879,856

Int. Cl.³ B01D *1/28*; C02F *1/06*

U.S. Cl. 203—11 **26 Claims**



1. In combination with a process employing steam ejection that includes inflowing an aqueous substance into a flash evaporation means for vaporizing water from the substance, discharging the substance remaining after said vaporization, supplying ejecting steam at a first pressure and a first enthalpy level to ejector means operatively connected to the flash evaporating means for creating and maintaining an under-pressure in said flash evaporation means and for evacuating and subsequently thermo-compressing the vaporized water from the flash evaporation means to a second pressure and second enthalpy level lower than the respective first pressure and first enthalpy level, a method for the continuous regeneration of ejecting steam, the method comprising:

(a) employing a predetermined quantity of ejecting steam in a returning conduit including said ejector means;
(b) expanding said ejecting steam in said ejector means to said second pressure and second enthalpy level;
(c) recompressing said expanded ejecting steam with mechanical compression means to its initial first pressure, and an enthalpy level at least equal to said first enthalpy level;
(d) repeating steps (b) and (c) in a continuous cycle, whereby the predetermined quantity of ejecting steam is continuously regenerated without condensing it and without using a boiler to regenerate it;
(e) branching off from the flow of steam/vapor mix exiting from the ejector means that part of the flow which is in excess of the initial recompressed ejecting steam flow, leaving thereby the predetermined quantity of ejecting steam flow for the continuous implementation of steps (b) and (c); and
(f) condensing the branched-off flow.

4,239,604

SELECTIVE LAYER FOR ABSORBING COMPARTMENT OF SOLAR COLLECTORS

Faramarz S. Mahdjuri, Via S. Sebastiano 33, Bergamo, Italy

Filed May 21, 1979, Ser. No. 40,521
Claims priority, application Switzerland, Jun. 2, 1978, 6033/78
Int. Cl.³ C25D 9/08; F24J 3/02
U.S. Cl. 204—56 R **7 Claims**

1. An electrolytic method for applying a black layer to a metal substrate with said black layer having an absorption coefficient greater than 0.9 for the solar spectrum and an emissivity of less than 0.1 for infrared thermal radiation up to 400° K., characterized in that the electrolyte utilized consist solely of an aqueous solution of one or more water-soluble thiocyanates selected from the group consisting of iron thiocyanate, cobalt thiocyanate, and nickel thiocyanate.

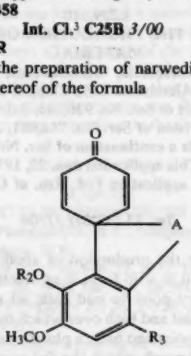
4,239,605

METHOD FOR THE ELECTROLYTIC PREPARATION OF NARWEDINE-TYPE DIENONES

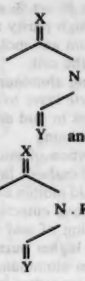
Radoslav Y. Vlahov; Dikran A. Krikoryan; Maria S. Zagorova; Maya H. Hinova, and Stoyan P. Parushev, all of Sofia, Bulgaria, assignors to Edinen Centar Po Chimia, Sofia, Bulgaria

Filed Nov. 14, 1979, Ser. No. 94,351
Claims priority, application Bulgaria, Nov. 21, 1978, 42315; Nov. 21, 1978, 41458
Int. Cl.³ C25B 3/00
U.S. Cl. 204—59 R **2 Claims**

1. Method for the preparation of narwedine-type dienones and derivatives thereof of the formula



wherein A is selected from the group consisting of

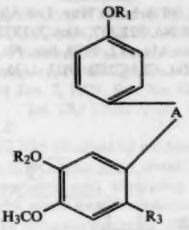


(a)

and

(b)

X and Y being selected from the group consisting of H_2 and O, R_2 and R_4 being low order alkylic groups selected from the group consisting of $CH_2C_6H_5$ and $CH_2C_6H_4OCH_3$, R_3 being a halogen atom and R_5 being $HClO_4$ and similar salts of an organic or inorganic acid which comprises electrochemically oxidizing a diphenolic compound of the formula



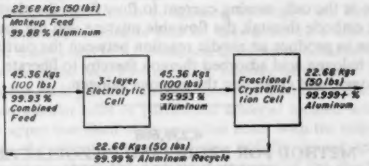
wherein R_1 is selected from the group consisting of low order alkylic groups of the formula $CH_2C_6H_5$ and $CH_2C_6H_4OCH_3$ and R_2 and R_3 are as defined above, said oxidizing being effected at an anode potential ranging from 1.1 to 1.7 volts in the presence of a solvent and a conductive salt.

4,239,606

PRODUCTION OF EXTREME PURITY ALUMINUM

Robert K. Dawless, Monroeville, and Stanley C. Jacobs, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 973,141, Dec. 26, 1979. This application Dec. 26, 1979, Ser. No. 107,149
Int. Cl.³ C25C 3/06
U.S. Cl. 204—67 **4 Claims**



1. An improved process for purifying aluminum containing impurities comprising:
(a) providing an electrolytic cell for the purification of aluminum, the cell of the type having a bottom layer of molten aluminum constituting an anode layer and having a top layer of molten aluminum constituting a cathode layer, the anode layer separated from the cathode layer by an electrolyte layer, the cell having a floor of carbonaceous material and walls comprised of
(i) an outer insulating refractory layer; and

(ii) an inner refractory liner fabricated from high purity bricks containing at least 90 wt.% alumina, the bricks bonded together with a high purity cement resistant to attack by molten aluminum and molten salt.

(b) introducing aluminum to the cell;

(c) electrolytically transporting aluminum from said anode layer through said electrolyte layer to said cathode layer while leaving said impurities in said anode layer thereby partially purifying said aluminum;

(d) thereafter, removing a portion of said partially purified molten aluminum from said cathode layer;

(e) fractionally crystallizing said molten aluminum portion in a crystallization cell to remove eutectic impurities therefrom by solidifying a fraction of said molten aluminum, said solid fraction having a higher purity than the constituting the remaining molten aluminum fraction, thereby concentrating said eutectic impurites in said molten fraction; and

(f) separating said molten fraction from said solid fraction to provide said purified aluminum.

4,239,607

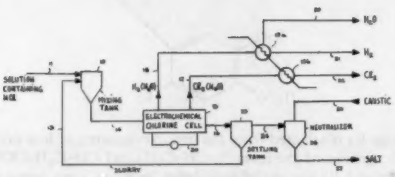
ELECTROCHEMICAL CHLORINE PRODUCTION PROCESS

Henri J. R. Maget, 80 Arbuelo Way, Los Altos, Calif. 94022

Continuation of Ser. No. 821,337, Aug. 3, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,309

Int. Cl.³ C25B *1/02, 1/26*

U.S. Cl. 204—128 **9 Claims**



1. A process for converting a halogen acid into a halogen comprising the steps of providing an aqueous slurry of electrically conductive electrocatalytic particles that are noncorrosive and adsorbent to the halogen acid, mixing the halogen acid with the slurry to form a flowable mixture in which the halogen acid is adsorbed on the particle surfaces, providing a cell having a cathode, an electrode spaced from the cathode and a cation permselective membrane between the electrode and the cathode, the membrane being impermeable to the slurry particles and being exposed to a volume in which the flowable mixture can freely circulate in contact with the electrode, introducing the flowable mixture in contact with the electrode and the membrane, continuously agitating the flowable mixture in the cell, causing current to flow from the electrode to the cathode through the flowable mixture and the membrane so as to produce an anodic reaction between the particles and the halogen acid adsorbed thereon thereby to liberate gaseous halogen, and collecting the gaseous halogen.

4,239,608

METHOD FOR PRODUCING PIEZOELECTRIC POLYMERIC MATERIAL

Philippos Pantelis, Ipswich, England, assignor to Post Office, London, England

Filed Jul. 19, 1978, Ser. No. 927,587

Claims priority, application United Kingdom, Jul. 19, 1977, 30237/77

Int. Cl.² B01J *1/10;* **C08F** *8/00*

U.S. Cl. 204—159.17 **7 Claims**

1. A method of enhancing the piezoelectric voltage coefficient of a polymeric material exhibiting piezoelectric properties, the method including the step of exposing the material whilst in an atmosphere inert with respect to the material and at substantially room temperature to a quantity of γ radiation lying within the range of from 1 Mrad to 200 Mrads (both limits included) after which the material is subjected to a poling treatment whereby the piezoelectric voltage coefficient of the material is increased over that obtained by subjecting the material without prior irradiation to said poling treatment.

4,239,609

PHOTOPOLYMERIZABLE COATING AND RECORDING MATERIALS CONTAINING A PHOTOINITIATOR AND AN ORGANIC HALOGEN COMPOUND

Helmut Barzynski, Bad Duerkheim, and Dietrich Saenger, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 974,622

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759164

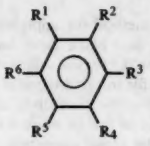
Int. Cl.³ C08F *2/50*

U.S. Cl. 204—159.23 **5 Claims**

1. A photopolymerizable coating and recording material comprising at least one photopolymerizable olefinically unsaturated organic compound and containing, as the activated photoinitiator system,

(a) at least one aromatic carbonyl compound that, when exposed to actinic light, forms free radicals which initiate polymerization, and

(b) a halogenated hydrocarbon of the formula



wherein two of the substituents R^1 and R^4 denote $-CHCl_2$, while the remaining substituents are identical or different and are inert with respect to the dichloromethyl groups, do not interfere with the photopolymerization or with the absorptivity of (b) of less than 20 (liter$\times$mol$^{-1}\times$cm^{-1}), at a wavelength range λ of from 315 to 400 nm, the amount of (b) containing dichloromethyl groups being at least 0.5% by weight of the whole composition, and being from 0.2 to 12 parts by weight per part by weight of aromatic carbonyl compound (a).

4,239,610

DEVICE FOR THE PRODUCTION OF ANODIZED MATERIAL

Harald Severus-Laubenfeld, Schaffhausen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation-in-part of Ser. No. 926,280, Jul. 20, 1978, Pat. No. 4,127,177, Division of Ser. No. 764,001, Jan. 31, 1977, abandoned, which is a continuation of Ser. No. 489,417, Jul. 17, 1974, abandoned. This application Jun. 22, 1979, Ser. No. 51,453

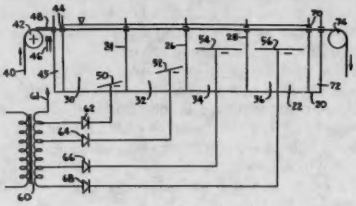
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1973, 2340962

Int. Cl.³ C25D *11/04*

U.S. Cl. 204—211 **9 Claims**

1. A device for the production of anodized aluminum or aluminum alloy foil in strip form in an electrolyte bath which comprises: an entry point to said bath; an anode roll spaced from said entry point and bath over which the foil passes on its way to said entry point and bath; a plurality of cathodes in said electrolyte bath through which the foil passes; and means to increase the effect of said cathodes on said foil with increasing

distance of the foil in the electrolyte from the point of entry in order to compensate for increased electrical resistance by



virtue of oxide growth and achieve uniform oxidation over the entire length of the bath.

4,239,611

MAGNETRON SPUTTERING DEVICES

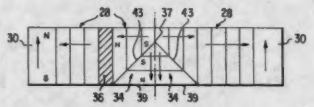
Charles F. Morrison, Jr., Boulder, Colo., assignor to Vac-Tec Systems, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 19,284, Mar. 9, 1979, which is a continuation-in-part of Ser. No. 946,370, Sep. 27, 1978, which is a continuation-in-part of Ser. No. 935,358, Aug. 21, 1978, Pat. No. 4,162,954. This application Jun. 11, 1979, Ser. No. 47,248

The portion of the term of this patent subsequent to Dec. 25, 1996, has been disclaimed.

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **62 Claims**



1. A magnetically enhanced sputtering device comprising

a cathode, at least a portion of which is provided with a sputtering surface;

an anode spaced from said cathode for establishing an electric field therebetween; and

first magnet means for establishing a magnetic field where at least some of the lines of force of the field extend over said sputtering surface, said first magnet means being disposed on the side of said cathode opposite said sputtering surface and extending along a line substantially parallel to at least a portion of said sputtering surface, and where the flux in said first magnet means extends between a first and second poles thereof; and

second magnet means for causing a majority of the said lines of force of said magnetic field to extend over said sputtering surface where at least some of the flux in said second magnet means is inclined at an angle with respect to the flux in said first magnet means so that said second magnet means at least partially blocks the flux from said first magnet means from extending on the side thereof opposite said cathode.

4,239,612

AUTOMATIC ELECTROPHORESIS APPARATUS

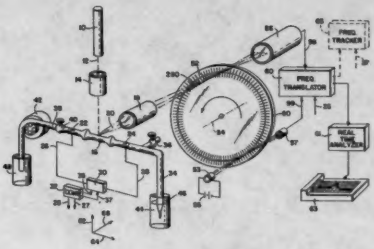
Philip J. Goetz, Pleasantville, N.Y., assignor to Pen Kem, Inc., Croton-On-Hudson, N.Y.

Division of Ser. No. 767,770, Feb. 11, 1977. This application Feb. 28, 1979, Ser. No. 16,181

Int. Cl.³ G01N *27/26, 27/28, 27/30*

U.S. Cl. 204—299 R **15 Claims**

1. A chamber for use in applying an electric field comprising an elongate tubular member and a conductive layer bonded to a portion of the surface of said tubular member serving as an electrode, said conductive layer being bonded to a portion on the interior surface of said tubular member, and



wherein said conductive layer includes a further portion on the exterior surface of said tubular member, said conductive layer further portion being electrically connected to said first-mentioned conductive layer.

4,239,613

DEASHED COAL FROM NITRIC ACID OXIDATION OF AQUEOUS COAL SLURRY

Johann G. Schulz, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 7, 1979, Ser. No. 46,441

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 LE **13 Claims**

1. Novel deashed coal obtained by oxidizing an aqueous coal slurry containing from about 40 to about 95 weight percent water with aqueous nitric acid, separating from the resulting product an aqueous phase and a solid phase, extracting the solid phase with a solvent, removing the solvent from the extract, and then heating the extract at a temperature of about 100° to about 500° C. and a pressure of about 10 millimeters of mercury to about atmospheric pressure in an inert atmosphere to remove volatile material therefrom.

4,239,614

HYDROCARBON CONVERSION PROCESS WITH ANNULAR GUARD BEDS

Le Roi E. Hutchings, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 898,342, Apr. 21, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,601

Int. Cl.³ C10G *47/12, 65/02*

U.S. Cl. 208—108 **4 Claims**

1. A catalytic hydrocarbon conversion process to more efficiently prevent plugging of the inlet surface of the catalyst bed which comprises the steps of:

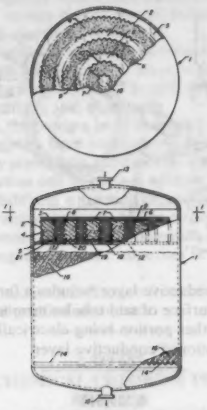
(a) passing a feed stream comprising hydrogen and hydrocarbonaceous reactants into an upper end of a reaction zone maintained at hydrocarbon conversion conditions;

(b) dividing the feed stream into a number of portions and passing each portion through one of a plurality of separated annular beds of particulate material located within the upper one-third of the reaction zone, with the annular beds of particulate material being radially spaced apart, concentric about the vertical major axis of the reaction zone and located at substantially the same vertical elevation within the reaction zone, and with the flow of the feed stream through each of the annular beds of particulate material being inward through both cylindrical sides of at lease an upper portion of the annular bed and outward through a lower portion of the annular bed;

(c) recombining the portions of the feed stream at a point below the annular beds of particulate material;

(d) passing the feed stream downward through a cylindrical bed of catalyst which is at least four times greater in

volume than the particulate material contained within the annular beds; and,



(e) removing a reaction zone effluent stream from a lower portion of the reaction zone.

4,239,615

HIGH OCTANE FCC PROCESS

Hosheng Tu, Shorewood, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 8,823, Feb. 2, 1979. This application Dec. 19, 1979, Ser. No. 105,318

Int. Cl.³ C10G *11/05*

U.S. Cl. 208—120 **14 Claims**

1. A process for cracking a hydrocarbon charge stock which comprises contacting said charge stock with a catalytic composite comprising a zeolitic crystalline aluminosilicate dispersed in a silica-alumina matrix and manufactured by:

(a) dispersing a zeolitic crystalline aluminosilicate in water to prepare a slurry;

(b) preparing a gelation product by mixing together in an aqueous medium an inorganic aluminum salt, an anionic polyacrylamide and an alkali-metal silicate;

(c) adding said slurry to said gelation product to obtain a slurry gel; and

(d) spray drying said slurry gel at a temperature sufficient to decompose said organic polymer.

4,239,616

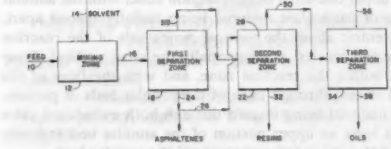
SOLVENT DEASPHALTING

Junior A. Gearhart, Oklahoma City, Okla., assignor to Kerr-McGee Refining Corporation, Oklahoma City, Okla.

Filed Jul. 23, 1979, Ser. No. 59,719

Int. Cl.³ C10G *21/00*

U.S. Cl. 208—309 **8 Claims**



1. A deasphalting process comprising:

providing a heavy hydrocarbon material;

providing a solvent;

admixing said heavy hydrocarbon material with said solvent in a mixing zone to form a mixture;

introducing said mixture into a first separation zone maintained at an elevated temperature and pressure to effect a separation of said mixture into a first light phase comprising oils, resins and solvent and a first heavy phase comprising asphaltenes and some solvent;

introducing said first light phase into a second separation zone maintained at a temperature level higher than the temperature in the first separation zone and at an elevated pressure to effect a separation of said first light phase into a second light phase comprising oils, entrained resins and solvent which collects in an upper portion of said second separation zone and a second heavy phase comprising resins and some solvent;

withdrawing said first heavy phase from said first separation zone;

introducing at least a portion of said first heavy phase into said upper portion of said second separation zone to contact said second light phase and settle therethrough to remove at least a portion of the entrained resins;

introducing said second light phase after contact with said first heavy phase into a third separation zone maintained at an elevated temperature and pressure to effect a separation of said second light phase into a third light phase comprising solvent and a third heavy phase comprising oils; and

recovering the third heavy phase as a product.

4,239,617

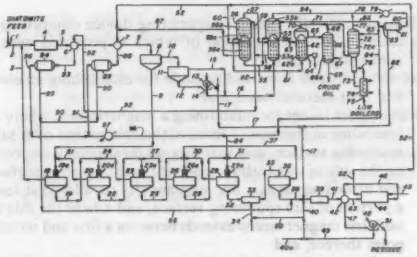
PROCESS AND APPARATUS FOR SOLVENT EXTRACTION OF OIL FROM OIL-CONTAINING DIATOMITE ORE

George B. Karnofsky, 1163 Firwood Dr., Pittsburgh, Pa. 15243

Division of Ser. No. 905,861, May 15, 1978, Pat. No. 4,167,470. This application Feb. 22, 1979, Ser. No. 13,906

Int. Cl.³ C10G *21/28*

U.S. Cl. 208—321 **3 Claims**



1. In a multiple effect evaporation process employing effects with heating jackets, for the separation and recovery of a volatile solvent and a solute from a solution thereof, derived from a solvent extraction process, the solvent having a boiling point below that of the solute, and the liquid solute containing a major portion of nonvolatile components and a minor portion of components that are volatile but higher boiling than said solvent, the improvement comprising:

(a) passing vapor generated in any one effect of said multiple effect evaporation process, from which liquid is discharged, through a fractional distillation zone in which said vapor is countercurrently scrubbed with reflux liquid from which a scrubbed solvent vapor and liquid are discharged;

(b) condensing, in the heating jacket of the next effect the scrubbed solvent vapor discharged from said fractional distillation zone to form a condensate;

(c) returning a portion of said condensate to said fractional distillation zone as said reflux liquid, and recycling the

remainder of said condensate to said solvent extraction process; and

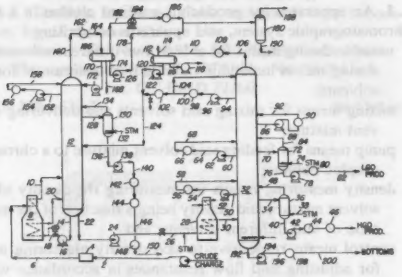
(d) combining the liquid discharged from said fractional distillation zone, comprising substantially all of said volatile components that enter said fractional distillation zone in said vapor, with liquid discharged from said any one effect.

4,239,618

TWIN TOWER DISTILLATION OF CRUDE OIL

Alfred M. Peiser, Rocky Hill, N.J.; Ronald I. Graham, Yardley, and Joseph R. McClernon, Morrisville, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 10, 1979, Ser. No. 37,794
Int. Cl.[3] C10G 7/00
U.S. Cl. 208—355 5 Claims



1. A method for fractionating crude oil into component streams suitable for further processing which comprises,

partially heating a crude oil stream to a temperature sufficient to separate a kerosene boiling range material into a low boiling fraction and a higher boiling range kerosene fraction in a first separation zone,

withdrawing the higher boiling range kerosene fraction along with higher boiling material of the crude oil charge from said first separation zone, heating the withdrawn material in the presence of steam to a higher temperature than initially heated and passing the heated higher boiling material to a second separation zone,

separating the material charged to the second separation zone into a heavy gas oil fraction, a light gas oil fraction, a kerosene and lighter fraction and a bottoms fraction higher boiling than the separated heavy gas oil fraction,

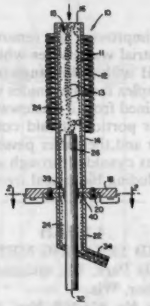
cooling and condensing the kerosene and lighter fraction of said second separation operation to form a low temperature condensate fraction comprising kerosene, passing the low temperature condensate fraction comprising kerosene to said first separation zone above the charge point of said partially heated crude oil, and separating the condensate fraction comprising kerosene in an upper portion of said first separation at lower temperatures permitting the recovery of kerosene boiling range material, naphtha boiling range material and materials lower boiling than naphtha.

4,239,619

PROCESS AND APPARATUS FOR SEPARATING MAGNETIC PARTICLES WITHIN AN ORE

Frank F. Aplan, State College, Pa., and Timothy M. Todd, Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 962,113, Nov. 20, 1978, abandoned, which is a continuation of Ser. No. 811,593, Jun. 30, 1977, abandoned, which is a continuation of Ser. No. 630,440, Nov. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 489,124, Jul. 17, 1974, abandoned, which is a continuation of Ser. No. 95,447, Dec. 7, 1970, abandoned. This application May 7, 1979, Ser. No. 36,695
Int. Cl.[3] B03G 1/14
U.S. Cl. 209—214 13 Claims



1. A process for separating magnetically susceptible particles from nonmagnetically susceptible particles within an ore material comprising:

(a) adding the ore material in a particulate form to a carrier medium;

(b) passing the ore containing carrier medium through an unobstructed confined zone surrounded by a superconducting solenoid magnet which provides a magnetic field in excess of about 15,000 gauss generated by said superconducting solenoid magnet such that essentially no magnetic field gradient forces are provided in said confined zone while substantial magnetic field gradient forces are provided only in the end regions outside said confined zone which are adjacent the entrance and exit of said zone and such that said magnetically susceptible particles within the ore are separated from said nonmagnetically susceptible particles only in said end regions where said ore enters and exits said confined zone; and

(c) mechanically separating the peripheral magnetic particles in the ore-containing carrier medium from the central nonmagnetic particles in said carrier medium only in said end region adjacent said confined zone.

11. An apparatus for separating magnetically susceptible particles within an ore material comprising a first hollow member defining a confined zone therein; a super-conducting magnetic means disposed along a portion of the axial length of said first hollow member whereby a magnetic field is generated in relation to said confined zone such that essentially no magnetic field gradient forces are provided in said confined zone while at the same time substantial magnetic field gradient forces are provided only in the end regions outside said confined zone which are adjacent the entrance and exit of said confined zone and such that said magnetically susceptible particles within the ore are separated from the nomagnetically susceptible particles in the ore only in said end regions where the ore enters and exits said confined zone; a second hollow member smaller than and concentrically disposed within said first hollow member and axially positioned below said magnetic field; and means for directing the output from said first and said second hollow members in separate directions.

4,239,620

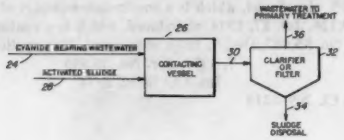
CYANIDE REMOVAL FROM WASTEWATERS

Brian E. Doll, Westmont, N.J.; Vernon F. Coty, West Chester, Pa., and Philip P. Lifland, Woodbury, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,418

Int. Cl.³ C02F *1/28, 3/00*

U.S. Cl. 210—601 **5 Claims**



2. A method for improving the removal of complex metal cyanides from industrial wastewater which comprises,

contacting at a pH within the range of 3–6 a water stream comprising complex metal cyanides with sufficient biological sludge obtained from a wastewater treating facility to remove a major portion of said complex cyanides from said wastewater and thereafter passing the wastewater of reduced complex cyanides through said wastewater treating facility, including biological treatment thereof.

4,239,621

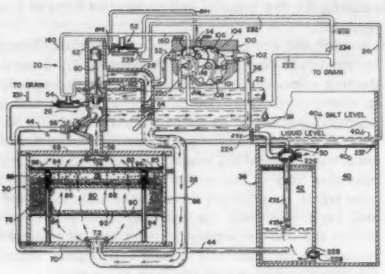
FLUID TREATING METHOD

Don E. Heskett, Villa Park, Ill., assignor to Fluid Power Research, Inc., Windsor, Wis.

Continuation of Ser. No. 856,168, Nov. 30, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 14,826

Int. Cl.³ B01J *39/00*

U.S. Cl. 210—687 **2 Claims**



1. A method of treating hard water containing sulfur compounds to simultaneously soften said water and remove said sulfur compounds therefrom, said method comprising removing said sulfur compounds from said hard water by passing said water containing said sulfur compounds through a bed of cation exchange resin particles having a particle size below 50 mesh measured on a dry basis, said bed of cation exchange resin material being characterized by the ion exchange resin particles being in surface to surface contact with each other and in substantially tightly packed relationship to each other.

4,239,622

PROCESS FOR THE DISINFECTION OF WATER

John W. Ridgway, Tilehurst, England, assignor to Interox Chemicals Limited, London, England

Filed May 17, 1978, Ser. No. 907,018

Claims priority, application United Kingdom, May 27, 1977, 22597/77

Int. Cl.³ C02F *1/50, 1/76*

U.S. Cl. 424—130 **4 Claims**

1. A process for disinfecting a water supply employing as disinfectant, in combination, 0.025–0.1 ppm monochloroamine and 0.1 to 0.5 ppm hydrogen peroxide in the water supply.

4,239,623

APPARATUS FOR PRODUCING GRADIENT ELUTION IN A LIQUID CHROMATOGRAPHIC SYSTEM

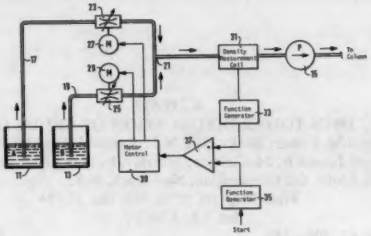
Helge Schrenker, Karlsruhe, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 7, 1980, Ser. No. 110,285

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1979, 2905160

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—96.1 **3 Claims**



1. An apparatus for producing gradient elution in a liquid chromatographic system, said apparatus comprising

variable dosing means for at least two different solvents said dosing means including variable flow resistances for said solvents;

mixing means for mixing said solvents and delivering a solvent mixture;

pump means for feeding said solvent mixture to a chromatographic column;

density measuring means for measuring the density of said solvent mixture said density being a function of the mixing ratio of said different solvents; and

control means responsive to said density measuring means for adjusting said flow resistances in accordance with a given nominal density curve corresponding to a desired elution gradient.

4,239,624

APPARATUS FOR MEMBRANE FILTRATION HAVING AN IMPROVED DESALTING EFFECT

Cornelis van Zon, Zwolle, Netherlands, assignor to Wafilin B.V., Zwolle, Netherlands

Filed Oct. 27, 1978, Ser. No. 955,331

Claims priority, application Netherlands, Oct. 27, 1977, 7711845

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—236 **13 Claims**

1. An apparatus for membrane filtration comprising:

a vessel provided with a liquid inlet for the supply of liquid to be treated,

a liquid outlet for the discharge of treated liquid,

a permeate discharge tube,

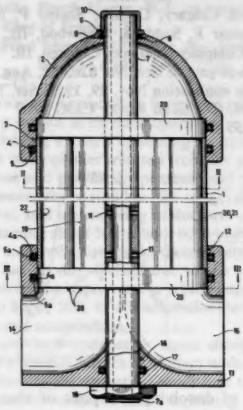
two rows of round supporting tubes surrounded by a vessel wall and formed into an inner row and an outer row,

each of said supporting tubes in the inner row and the outer row supporting internally a non-woven tube upon which a filtration membrane is attached internally,

said two rows of supporting tubes contacting each other in a longitudinal direction,

wherein the centers of the cross sections of the supporting

tubes in the outer row and the centers of the cross sections of the supporting tubes in the inner row are on the circumference of two concentric circles formed by the two rows of supporting tubes.



4,239,625

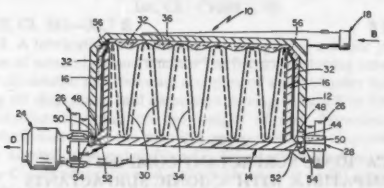
POTTING PLEATED MEMBRANE

Dennis J. Hlavinka, Lakewood, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 810,956, Jun. 29, 1977, abandoned. This application Apr. 25, 1979, Ser. No. 33,205

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **28 Claims**



26. In a fluid flow transfer apparatus comprising a housing, a pleated membrane contained within said housing and having its tips on at least one side thereof bonded to the interior of said housing by potting material, and spacers positioned within the folds of said membrane opposite the membrane side to be bonded, the improvement wherein there is controlled penetration of potting material into spaces separating said folds on the side which is bonded and said membrane tips are crushed against and conformed to the shape of their respective said spacers so that during operation of the apparatus the tendency of the membrane tips to peel away from the potting material and in toward the spacers is resisted, thereby preventing formation of a fluid-shunting flow passage between the membrane tips and the potting material.

4,239,626

FILTER FOR REMOVING FINES

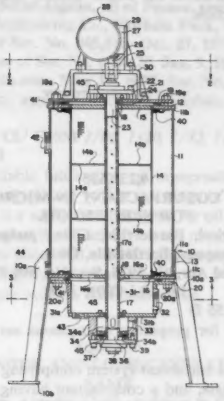
Michael Vamvakas, Rocky River, Ohio, assignor to Niagara Bottle Washer Manufacturing Co., Cleveland, Ohio

Filed Feb. 21, 1979, Ser. No. 13,674

Int. Cl.³ B01D *33/06, 23/06, 35/16*

U.S. Cl. 210—333.01 **4 Claims**

1. A filter for removing loose particles carried in a liquid stream, comprising a frame, an imperforate cylindrical tank wall mounted on said frame, a generally hollow generally perforated shaft rotatably mounted on said frame and extending axially through said tank, a cylindrical perforated drum concentric and rigid with said shaft and spaced between said shaft and said tank, said drum having closely spaced perforations all over, a closed circular end for one end of said drum extending between said drum and said shaft and rigidly secured to said shaft, a perforated circular end for the other end of said drum extending between said drum and said shaft and rigidly secured to said shaft said hollow shaft extending outwardly beyond each of said ends, annular partial end plates on said frame rigidly secured to said tank at its opposite ends, said partial end plates extending from said tank to locations adjacent said drum and substantially co-planar with said circular ends, a continuous annular seal at each of said locations secured to the associated partial end plate and engaging said drum, a discharge chamber on said frame downstream from said drum at the perforated end thereof and in communciation therewith, a discharge outlet for said chamber for cleansed liquid, an inlet device at the opposite end of said tank for inlet of dirty liquid, a source of back-flushing liquid communicating with one end of said hollow generally perforated shaft, said shaft passing through said discharge chamber and being imperforate there, a controlled exit in said tank for disposal of back-flushed material, and an electrical motor drivingly connected with one end of said hollow shaft.



4,239,627

FILTERING MEMBER AND METHOD FOR MANUFACTURING THE SAME

Yoneji Wada, 32-2-1324 Takashimadaira 2-chome, Itabashi-ku, Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 73,034

Claims priority, application Japan, Mar. 16, 1979, 54-34621[U]

Int. Cl.³ B01D *27/04*

U.S. Cl. 210—484 **6 Claims**

4. A method for manufacturing a filtering member for use in filtering impurities of different sizes contained in a fluid in a bulk filtering mode comprising:

preparing a rectangular sheet of resilient and uniformly porous material;

clamping the sheet between a pair of resilient plates; and

winding an assembly of the sheet and the resilient plates by one turn into a substantially cylindrical body having a central hollow space in such a manner that an outer portion of the cylindrical body is stretched and an inner

portion of the cylindrical body is compressed, and the cylindrical body has a porosity gradient which decreases

gradually towards the center hollow space viewed in a radial direction.

4,239,628

OPTIMIZING COSURFACTANT IN MICROEMULSION FOR SPECIFIC OIL

James E. Vinatieri, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 10, 1978, Ser. No. 894,878
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—8.55 D **9 Claims**

1. A process for preparing an aqueous surfactant system comprising:

(a) preparing a surfactant system comprising brine, a petroleum sulfonate, and a cosurfactant having a solubility in water within the range of 0.5 to 20 grams per 100 grams of water;

(b) mixing the resulting surfactant system with oil corresponding to that to be produced, allowing the system to equilibrate and form three phases, an upper predominantly oil phase, a middle microemulsion phase, and a lower predominantly aqueous phase;

(c) analyzing the upper and lower phases for cosurfactant content; and

(d) preparing a new surfactant system utilizing a cosurfactant of differing solubility from that of (a) so as to give a system which on equilibration with oil will result in the distribution of the cosurfactant more nearly equally into said upper and lower phases.

4,239,629

CARBOXYMETHYLHYDROXYETHYL CELLULOSE IN DRILLING, WORKOVER AND COMPLETION FLUIDS

Charles A. Sauber, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 5, 1978, Ser. No. 912,689
Int. Cl.³ C09K *7/02*
U.S. Cl. 252—8.5 C **8 Claims**

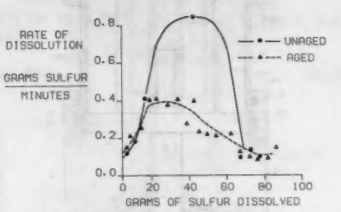
1. A gel obtained in a water of any salinity by bringing together a viscosity increasing amount of carboxymethylhydroxyethyl cellulose and a compound selected from the group consisting of alkali metal and ammonium dichromates, in the absence of a reducing agent, said compound being present in the approximate range of from about 0.25 to about 5 pounds per barrel of the gel.

4,239,630

METHOD FOR DISSOLVING SULFUR DEPOSITS RAPIDLY

Fred T. Atkinson, Calgary, Canada; Shelby P. Sharp, Tulsa, Okla., and Lamar F. Sudduth, Glenwood, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 820,652, Aug. 1, 1977, abandoned. This application Nov. 29, 1978, Ser. No. 965,138
Int. Cl.³ E21B *43/00*; C23G *5/02*
U.S. Cl. 252—8.55 B **8 Claims**



1. A method of dissolving a deposit of elemental sulfur involving the steps of:

(a) first preparing a liquid sulfur solvent composition, not in contact with said deposit of elemental sulfur to be dissolved and possessing improved kinetics relative to the dissolution of elemental sulfur, consisting of a dialkyl disulfide wherein at least one part by weight of an aliphatic saturated unsubstituted amine has been added per 100 parts by weight of said dialkyl disulfide and wherein from about 5 to 40 parts by weight of solid sulfur has been added per 100 parts by weight of said dialkyl disulfide, and

(b) then placing said sulfur solvent composition, prepared in step (a), in contact with said deposit of elemental sulfur to be dissolved, thus dissolving said deposit.

4,239,631

CATIONIC SURFACTANT COMPOSITIONS COMPATIBLE WITH ANIONIC SURFACTANTS

Herman Brown, Teaneck, N.J., assignor to Finetex Incorporated, Elmwood Park, N.J.

Continuation-in-part of Ser. No. 17,186, Mar. 5, 1979, abandoned. This application Dec. 11, 1979, Ser. No. 102,555
Int. Cl.³ C11D *1/4, 1/62*; D06M *0/00*
U.S. Cl. 252—8.75 **14 Claims**

1. A cationic surfactant composition which is compatible with anionic surfactants, and which in aqueous admixture therewith provides a system useful in simultaneous cleansing and conditioning of hair, fabrics, textiles and the like; said composition comprising:

a mixture of the diethyl sulfate salts of the cyanoethylated fatty acid amides

$$\mathrm{RCONH{-}CH_2{-}CH_2{-}N(CH_2{-}CH_2{-}CN){-}CH_2{-}CH_2NH{-}CH_2{-}CH_2CN}, \text{ and}$$

$$\mathrm{RCONH{-}CH_2{-}CH_2{-}N(CH_2{-}CH_2{-}CN){-}CH_2{-}CH_2NHCOR},$$

where R is an unbranched hydrocarbon chain, having from 17 to 21 carbon atoms, and said salts being in the respective ratio by mole percent of the active ingredients of said mixture of from about 1:2 to about 1:3.

4,239,632

LUBRICANT COMPOSITION

George H. Baile, Beach Haven, N.J., assignor to SKF Industries, Inc., King of Prussia, Pa.

Filed Mar. 14, 1979, Ser. No. 20,433
Int. Cl.[3] C10M 5/00, 7/00
U.S. Cl. 252—12 11 Claims

1. In a lubricating composition for prolonged use in contact with a bearing surface at elevated operating temperatures, said composition having a matrix consisting essentially of about 20 to about 50% of a polymer selected from the group consisting of polyethylene and polymethylpentene, said polymer having an average molecular weight in the range from about 1 to about 5 million, said matrix being in the form of a firm, tough, solid gel containing about 50 to about 60% of an oil of lubricating viscosity uniformly distributed therethrough whereby said composition has an oily surface due to the exudation of oil from said matrix, the improvement which comprises:

about 20 to about 50% of a heat conductive agent incorporated in said composition,

whereby said heat conductive agent dissipates heat produced at a bearing surface in contact with said lubricating composition under operating conditions thereby improving the performance of said lubricating composition in withstanding elevated operating temperatures and in resisting breakdown of the gel matrix under prolonged use or elevated temperature, said percentages being by weight of the entire composition.

4,239,633

MOLYBDENUM COMPLEXES OF ASHLESS POLYOL ESTER DISPERSANTS AS FRICTION-REDUCING ANTIWEAR ADDITIVES FOR LUBRICATING OILS

Antonio Gutierrez, Mercerville, and Stanley J. Brois, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 4, 1979, Ser. No. 45,066
Int. Cl.[3] C10M 1/48
U.S. Cl. 252—32.7 E 5 Claims

1. A lubricating oil composition comprising a major proportion of mineral oil and a minor but friction-reducing amount of an oil-soluble molybdenum complex of a polyol ester lubricating oil dispersant, said dispersant having from 0.5 to 10 wt.% molybdenum based on the weight of said dispersant, said polyol ester being the reaction product of a C_2–C_{100} polyhydric alcohol with either (a) a C_8–C_{400} hydrocarbyl substituted C_4–C_{10} dicarboxylic acid, anhydride or ester or (b) a mono- or dithio-bis-(lactone alkanoic acid anhydride ester), mono- or dithio-bis-(alkene dioic acid or anhydride or ester) or dithio-bis-(alkane dioic acid, anhydride or ester) acylating agent, said agent containing a hydrocarbyl or substituted hydrocarbyl group having from 1 to about 10,000 carbon atoms.

2. A lubricating oil composition according to claim 1 further comprising an oil-soluble active sulfur donor selected from the group consisting of metal dihydrocarbyl dithiophosphates and the corresponding precursor esters thereof, phosphosulfurized pinenes, sulfurized olefins and hydrocarbons, sulfurized fatty esters and sulfurized alkyl phenols, said composition providing from about 0.01 to 2.0 weight percent molybdenum and said sulfur donor being present in at least 0.25 weight percent, all of said weight percents being based on the total weight of said composition.

5. A concentrate comprising from 5 to 80 wt.% of the combination of an oil-soluble molybdenum complex of a polyol ester dispersant, the polyol ester being the reaction product of a C_2–C_{100} polyhydric alcohol and either (a) a C_8–C_{100} hydrocarbyl substituted C_4–C_{10} dicarboxylic acid, anhydride or ester or (b) a mono- or di-thio-bis-(lactone alkanoic acid anhydride or ester), mono- or dithio-bis-(alkene dioic acid or anhydride or ester), or dithio-bis-(alkane dioic acid or anhydride or ester) acylating agent, said agent containing a hydrocarbyl or substituted hydrocarbyl group having from about 1 to 10,000 carbon atoms, said complex having from 0.5 to 10 wt.% molybdenum based on the weight of said dispersant and from about 0.1 to 10 parts by weight of active sulfur donor per part by weight of said complex, said sulfur donor being a member of the group consisting of metal dihydrocarbyl dithiophosphates and the corresponding precursor esters thereof, phosphosulfurized pinenes, sulfurized olefins and hydrocarbons, sulfurized fatty esters and sulfurized alkyl phenols, and 20 to 95 wt.% of an additive concentrate solvent selected from the group consisting of kerosene, mineral oil, synthetic oil or naphtha.

4,239,634

LUBRICATING OIL CONTAINING A SURFACE ACTIVE AGENT

Pierre D. Marin, Rouen; Marcel Prillieux, and Robert Tirtiaux, both of Mont-Saint-Aignan, all of France, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 845,813, Oct. 27, 1977, abandoned, which is a division of Ser. No. 648,120, Jan. 9, 1976, abandoned. This application May 14, 1979, Ser. No. 38,529
Claims priority, application United Kingdom, Jan. 17, 1975, 2123/75
Int. Cl.[3] C10M 1/06, 1/20, 1/32, 1/38
U.S. Cl. 252—33 5 Claims

1. An emulsifiable lubricating oil composition comprising mineral lubricating oil and within the range of 1 to 50 wt. %, of a salt, which is a surface active agent for oil in water emulsions of an alkarylsulphonic acid the mean molecular weight of which is between about 400 and 1000 and an organic base, said organic base being the addition product of 1 to 10 moles of ethylene oxide per mole of triethanolamine.

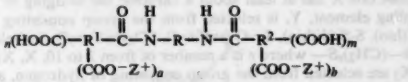
4,239,635

NOVEL DIAMIDE AND LUBRICANTS CONTAINING SAME

Walter E. Rieder, Arcadia, Calif., assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jun. 11, 1979, Ser. No. 47,285
Int. Cl.[3] C10M 1/32
U.S. Cl. 252—34 25 Claims

1. A carboxylic acid group terminated polyoxyalkylene diamide and the alkali metal, ammonium or organic amine salt thereof having the following formula



wherein

R is the divalent polyoxyalkylene chain radical residue of an amine terminated polyoxyalkylene diamine absent the terminal amine groups,

R^1 and R^2 are the same or different and are selected from the group consisting of aliphatic, aromatic, cycloaliphatic, arylaliphatic, alkyl aromatic, thiodialiphatic, halogen substituted aliphatic or halogen substituted aromatic radicals and having a free valence of a+n+1 and b+m+1 respectively,

Z is an organic amine cation, ammonium ion or alkali metal ion,

a is 0 to 3,

b is 0 to 3,

n is 0 to 3,

m is 0 to 3,

a+n is 0 to 3,

b+m is 0 to 3 and

a+b+m+n is 1 to 6.

14. A metal working composition comprising (a) a substance selected from the group consisting of natural oil, synthetic oil and water and (b) from 0.01% to 99% by weight based on the total weight of the composition of a carboxylic acid group

terminated polyoxyalkylene diamide or the alkali metal, ammonium or organic amine salt thereof according to claim 1.

4,239,636

THIO-BIS-(ALKYL LACTONE ACID ESTERS) AND THIO-BIS-(HYDROCARBYL DIACID ESTERS) ARE USEFUL ADDITIVES FOR LUBRICATING COMPOSITIONS

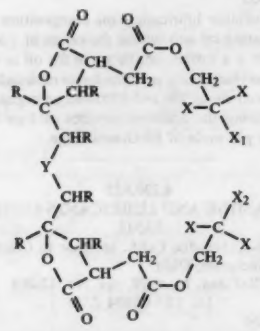
Stanley J. Brois, Westfield, and Antonio Gutierrez, Mercerville, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 768,265, Feb. 14, 1977, Pat. No. 4,123,373, and Ser. No. 806,326, Jun. 13, 1977, Pat. No. 4,167,514, which is a division of Ser. No. 726,206, Sep. 24, 1976, Pat. No. 4,062,786. This application Oct. 23, 1978, Ser. No. 954,051

Int. Cl.³ C10M *1/38*

U.S. Cl. 252—48.6 **6 Claims**

1. A lubricating oil composition comprising a major amount of lubricating oil and at least a dispersing amount of a macrocyclic-like additive represented by the formula



wherein R is selected from the group consisting of hydrogen, hydrocarbyl and substituted hydrocarbyl containing from 1 to 10,000, preferably 12 to 200, carbons with the restriction that at least one R has at least about 4 carbons; the bridging or coupling element, Y, is selected from the group consisting of S (thio), S-S (dithio), S=O (sulfinyl), SO_2 (sulfonyl), Se (seleno), $S—(CH_2)_zS—$ where z is a number of from 2 to 10, X, X_1 and X_2 are selected from the group consisting of hydrogen, alkyl, hydroxyl, acyloxy, hydroxyalkyl, $CH_2OCH_2C(CH_2OH)_3$, and $—O(CH_2—CH_2O)_nH$ where n is 1 to 50.

4,239,637

MAGNETIC MATERIAL FOR RECORDING MEDIA

Tunehide Naruse, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Feb. 7, 1979, Ser. No. 10,265

Claims priority, application Japan, Feb. 10, 1978, 53/14774

Int. Cl.³ C04B *35/26, 35/36, 35/38*

U.S. Cl. 252—62.54 **3 Claims**

1. A magnetic material for magnetic recording media, comprising:

acicular particles of a magnetic substance selected from the group consisting of γ—Fe_2O_3, Co-containing γ—Fe_2O_3, and Co-containing Fe_3O_4, said acicular particles having a mean length in the range of from about 0.3 μm to about 2.0 μm; and

particles of a ferrite selected from the group consisting of Mn-ferrite, Zn-ferrite and Mn—Zn ferrite, said particles of said ferrite amounting to from about 0.5% to about 20% by weight of said acicular particles and having a generally spherical particle shape and a mean particle size in the range of from about 0.2 μm to about 2.0 μm.

4,239,638

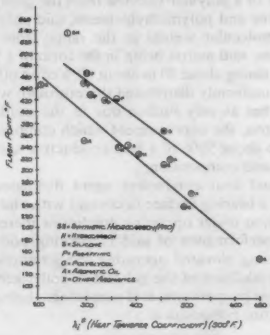
USE OF SYNTHETIC HYDROCARBON OILS AS HEAT TRANSFER FLUIDS

David Beretta, Middlebury; Frederick C. Loveless, Cheshire, and Walter Nudenberg, Newtown, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 853,935, Nov. 22, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,511

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—73 **32 Claims**



1. In a heat transfer system comprising heat source means, heat sink means, a heat transfer fluid and means for conducting said heat transfer fluid between said source means and said sink means; the improvement comprising using as said heat transfer fluid in said system a hydrocarbon oil produced from homopolymers, copolymers, or combinations thereof, of alpha olefin monomers having from six to twelve carbon atoms, said oil having a pour point of no higher than −35° F., a kinematic viscosity no higher than 25 centistokes at 210° F., and a flash point of at least 530° F.

4,239,639

GRANULAR DETERGENT COMPOSITION COMPRISING AIR-SENSITIVE MATERIAL IN PROTECTIVE BAG

Lawrence A. Gilbert, Fairfield, and Jeffrey R. Leist, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 19, 1979, Ser. No. 50,032

Int. Cl.³ B32B *15/08, 15/12;* B65D *75/26, 81/22*

U.S. Cl. 252—90 **7 Claims**

1. A granular detergent composition comprising at least one air-sensitive ingredient in a pouch formed by heat sealing a laminate comprising:

(a) an outer layer of a material having a melting point greater than about 350° F., selected from the group consisting of: oriented polypropylene, polyester, and cellophane and mixtures thereof, having a thickness of from about 0.0005 to about 0.001 inch;

(b) a layer of aluminum foil having a thickness of from about 0.0003 to about 0.0005 inch;

(c) a layer of paper having a basis weight per ream of from about 25 pounds to about 50 pounds; and

(d) an inner layer of a material having a thickness of from about 0.001 to about 0.002 inch and a melting point between about 150° and 350° F., selected from the group consisting of polyethylene, wax, and mixtures thereof, said material being a hot melt glue, said pouch comprising a structure which can be destructively rearranged to form a reclosable spout.

5. The composition of claim 1 in which the air-sensitive material is selected from the group consisting of chlorinated trisodium orthophosphate, sodium dichloroisocyanurate, po-

tassium dichloroisocyanurate, sodium silicates and potassium silicates having SiO_2:Na_2O and SiO_2:K_2O ratios of from about 1:1 to about 3.6:1 and mixtures thereof.

4,239,640

MANUFACTURE OF DETERGENTS

Thomas A. Williams, Beckermet, and Douglas E. Mather, Hillcrest, both of England, assignors to Albright & Wilson Ltd., Oldbury, England

Filed Oct. 31, 1977, Ser. No. 847,379

Claims priority, application United Kingdom, Nov. 2, 1976, 45509/76

Int. Cl.[2] C11D 7/54

U.S. Cl. 252—95 **9 Claims**

1. In the process for the manufacture of a solid powder detergent having as one constituent an ethoxylated alcohol or mixture thereof in which the average carbon number of the alcohol moiety is 10–18 and the average chain length of the polyethoxy moiety is 6–12 ethoxy radicals per molecule wherein said ethoxylated alcohol in liquid form is added to a spray-dried powder detergent mixture containing from 1 to 7% by weight residual unbound water, the improvement comprising

mixing said ethoxylated alcohol in aqueous solution with said powder mixture, said ethoxylated alcohol in aqueous solution having a concentration of alcohol higher than the minimum at which a gel is formed and in sufficient proportion so that when admixed with said spray-dried mixture including said residual unbound water, said aqueous ethoxylated alcohol forms an immobile gel on the powders forming said spray-dried mixture.

4,239,641

USE OF POLYHYDRIC ALCOHOLS, CARBOXYLIC ACIDS, HYDROXY-CARBOXYLIC ACIDS AND/OR THEIR ESTERS WITH POLYHYDRIC ALCOHOLS AS VISCOSITY REGULATORS

Johannes Perner, Neustadt; Paul Diessel, Mannheim; Dieter Stoeckigt, Ludwigshafen; Franz Merger, Frankenthal, and Juergen Paetsch, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,777

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834073

Int. Cl.[3] C11D 3/065, 3/20, 3/43, 11/02

U.S. Cl. 252—142 **6 Claims**

1. A method for regulating the viscosity of aqueous slurries of detergents and cleansers, wherein there are added to the slurries, as viscosity regulators, dihydric, trihydric or tetrahydric aliphatic alcohols, monobasic aliphatic carboxylic acids, hydroxycarboxylic acids, esters of the said alcohols and the said acids or mixtures of these, in which compounds the alcohols, carboxylic acids and hydroxycarboxylic acids, and the individual components of the esters, are of 5 to 9 carbon atoms, of which one is a quaternary atom, the alcohols and hydroxycarboxylic acids carry exclusively primary alcohol groups, and the carboxylic acids and hydroxycarboxylic acids have the carboxyl group bonded to the quaternary carbon atom, the amount of said regulators being at least 1% by weight based on the solids content of the slurries, said regulators acting to reduce the viscosity of the slurries and to stabilize the slurries against fluctuations in viscosity.

2. The method of claim 1, wherein trimethylolpropane, neopentyl glycol, pentaerythritol or a mixture of these is employed as the polyhydric alcohol.

4,239,642

STABILIZATION OF HALOGENATED POLYOLS FOR POLYURETHANE PRODUCTION

Harry V. DePaul, Eddystone, Pa., and John R. Panchak, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 29, 1979, Ser. No. 53,441

Int. Cl.[3] C08G 18/14, 18/18, 18/34; C09K 3/00

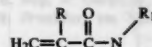
U.S. Cl. 252—182 **11 Claims**

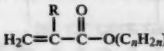
1. A stabilized premix composition for preparation of fire retardant polyurethane foam by reaction with a tertiary amine polyurethane catalyst and an organic isocyanate, said composition being stable as to deactivation of said catalyst and comprising: a halogenated polyol, said catalyst, and a stabilizing amount of a vinyl monomer compound, said monomer being a condensation product of acrylic or methacrylic acid with an alcohol or amine.

8. A stabilized premix composition for preparation of fire retardant polyurethane foam by reaction with organic isocyanate, said composition comprising in parts by weight:

halogenated polyether polyol	100
chlorofluorocarbon blowing agent	45
dimethylethanolamine	3.5
vinyl monomer	2 to 4

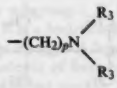
said vinyl monomer corresponding to a formula from the group consisting of



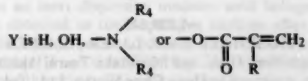


and

wherein R is H or CH_3; R_1 is H, an alkyl radical of 1 to 4 carbon atoms or a hydroxyalkyl radical of 2 to 3 carbon atoms; R_2 is an alkyl radical of 1 to 4 carbon atoms, a hydroxyalkyl radical of 2 to 3 carbon atoms or a substituted aminoalkyl group of the formula



wherein each R_3 is independently an alkyl radical of 1 to 4 carbon atoms or a hydroxyalkyl radical of 2 to 3 carbon atoms, and p is 2 to 4;



wherein each R_4 is independently an alkyl radical of 1 to 4 carbon atoms m is 1, and n is 1 to 12; provided that n is 2 when Y is OH or

B is hydrogen or an alkyl radical of 2 to 4 carbon atoms, r is 3 or 4, t being zero when r is 4 and t being one when r is 3.

4,239,643

PEROXIDE STABILIZATION

Xavier Kowalski, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1979, Ser. No. 403
Int. Cl.[3] C11D 3/06, 3/395, 7/56
U.S. Cl. 252—182 5 Claims

1. An essentially anhydrous composition containing metal sequestering compounds comprising alkali metal polyphosphate and alkali metal diethylene triamine penta(methylene phosphonate) in a weight ratio of said polyphosphate to said phosphonate from about 10:1 to about 1:5.

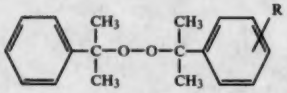
4,239,644

LIQUID PEROXIDE COMPOSITION

Hirohiko Nambu, Iwakuni; Kenichi Mizuno, and Tetuhiro Matumoto, both of Otake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,499
Int. Cl.[3] C08C 19/04; C08F 8/06; C07C 179/14
U.S. Cl. 252—186 8 Claims

1. A peroxide composition which is liquid at 25° C. and which can be used as a liquid cross-linking agent for high polymers, comprising (A) dicumyl peroxide and (B) a peroxide represented by the following general formula:



wherein R stands for an alkyl group having 1 to 3 carbon atoms,
at an (A)/(B) weight ratio of from 70/30 to 5/95.

4,239,645

PHOSPHATE BASE LASER GLASSES

Tetsuro Izumitani, Hino, and Michitaka Tsuru, Akishima, both of Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Filed Mar. 17, 1976, Ser. No. 667,756
Claims priority, application Japan, Mar. 18, 1975, 50-32696
Int. Cl.[2] C03C 3/16; C09K 11/42, 11/46; C03C 3/28
U.S. Cl. 252—301.4 P 3 Claims

1. A phosphate base laser glass possessing an induced emission cross section σ of 4.50 to 5.20×10^{-20} cm^2, a non-linear refractive index coefficient n_2 of 1.13 to 1.24×10^{-13} e.s.u., an acid resistance weight loss Da of 0.15 to 0.17% by weight and a devitrification resistance Tg/LT of 0.470 to 0.485, consisting of

(i) 58 to 67% P_2O_5,
(ii) 4 to 10% Al_2O_3,
(iii) 9 to 15% Li_2O,
(iv) 4 to 10% Na_2O,
(v) 0 to 12% CaO, 0 to 12% MgO, 0 to 12% CaF_2, 0 to 12% MgF_2, the total proportion of said CaO, MgO, CaF_2 and MgF_2 being 5 to 12%,
(vi) 0 to 3% Y_2O_3,
(vii) 0.2 to 0.8% Nb_2O_5, and
(viii) 0.2 to 1.5% Nd_2O_3,

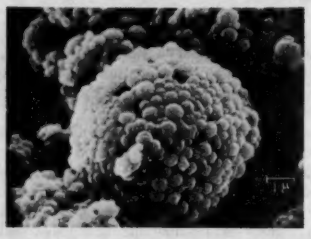
said percentages being by mole.

4,239,646

MICROSPHERIC OPACIFYING AGENTS AND METHOD FOR THEIR PRODUCTION

David N. Vincent, Glenview, and Ronald Golden, Mt. Prospect, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Sep. 23, 1974, Ser. No. 508,322
Int. Cl.[3] B01J 13/02; C08J 9/28
U.S. Cl. 252—316 23 Claims



1. A process for the preparation of substantially spherical, opacifying particles, which process comprises admixing an aqueous, partially condensed, aldehyde condensation product with an oily material and a surface-active emulsifying agent to form a water-in-oil emulsion, admixing an amphiphilic acid catalyst with said emulsion and polymerizing said aldehyde condensation product in a polymerization zone to form substantially spherical, polymerized particles, said particles being substantially solid throughout.

18. Opacifying agents consisting essentially of substantially spherical super-particles, each of said super-particles having a substantially spherical, discontinuous shell composed of agglomerated discrete, secondary particles formed from an aldehyde condensation product, said shell surrounding a substantially spherical hollow core, said secondary particles being substantially spherical and substantially solid throughout.

4,239,647

METHOD AND APPARATUS FOR MANUFACTURING AMMONIA SYNTHESIS GAS FROM A STREAM OF GAS RICH IN HYDROGEN AND A STREAM OF NITROGEN

Brian A. McNeil, Chessington, United Kingdom, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 25, 1980, Ser. No. 115,302
Claims priority, application United Kingdom, Mar. 8, 1979, 08136/79; Nov. 2, 1979, 38046/79
Int. Cl.[3] C01B 2/02; F25J 3/00
U.S. Cl. 252—377 4 Claims

1. A method for manufacturing ammonia synthesis gas from a stream rich in hydrogen and a stream of nitrogen which method comprises the steps of:

(a) cooling said stream of nitrogen and said stream rich in hydrogen in a first heat exchanger to a temperature which, when said nitrogen leaving said first heat exchanger is at or above its critical pressure, is between 8° C. and 28° C. above its critical temperature;
(b) introducing said stream rich in hydrogen leaving said first heat exchanger into the bottom of a second heat

exchanger and cooling said stream rich in hydrogen as it passes upwardly through said second heat exchanger;
(c) introducing said stream rich in hydrogen leaving said second heat exchanger into the lower portion of a nitrogen wash column;
(d) cooling part of said stream of nitrogen leaving said first heat exchanger to below its critical termperature in a third heat exchanger arranged with its warm end uppermost;
(e) introducing said stream of nitrogen leaving said third heat exchanger into the top of said nitrogen wash column to act as reflux;
(f) dividing the vapour consisting essentially of hydrogen and nitrogen from the top of said nitrogen wash column into two streams;
(g) passing one of said streams through said second heat exchanger in countercurrent flow to said stream rich in hydrogen;
(h) passing the other of said streams through said third heat exchanger in countercurrent flow to said stream of nitrogen;
(i) combining said one and said other streams leaving said second and third heat exchangers respectively and the balance of said stream of nitrogen leaving said first heat exchanger to form ammonia synthesis gas;
(j) passing said ammonia synthesis gas through said first heat exchanger in countercurrent flow to said stream rich in hydrogen and said stream of nitrogen;
(k) expanding liquid (containing impurities washed out of said stream rich in hydrogen and nitrogen) leaving the bottom of said nitrogen wash column and passing the two phase mixture thus forward through said second heat exchanger wherein it vaporises in countercurrent flow to said stream rich in hydrogen and passing said vapour through said first heat exchanger in countercurrent flow to said stream rich in hydrogen and said stream of nitrogen.

4,239,648

TELOMERIC PHOSPHORUS CORROSION INHIBITING COMPOSITIONS

Alan Marshall, Macclesfield, and Norman Richardson, Middleton, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

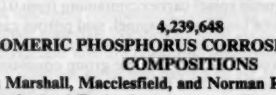
Filed Jul. 12, 1979, Ser. No. 57,155

Claims priority, application United Kingdom, Jul. 19, 1978, 30419/78

Int. Cl.³ C23F *11/16, 11/18*

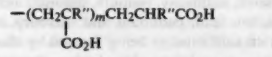
U.S. Cl. 252—389 A **18 Claims**

1. A composition for inhibiting the corrosion of ferrous metal in contact with aqueous systems comprising
(a) a product comprising a telomeric compound of the formula:



I

and salts thereof, wherein R'' is hydrogen or a methyl or ethyl residue, R is hydrogen, a straight- or branched alkyl residue, having from 1 to 18 carbon atoms, a cycloalkyl residue having from 5 to 12 carbon atoms, an aryl residue, an aralkyl residue, a residue of formula:



wherein R'' has its previous significance and the sum n+m is zero or an integer of at the most 100, or a residue—OX wherein X is hydrogen or a straight- or branched alkyl residue having from 1 to 4 carbon atoms and R' is a residue—OX wherein X has its previous significance; or a salt thereof; and
(b) one or more compounds selected from:
(i) a zinc salt
(ii) a polyphosphate
(iii) a silicate and/or
(iv) a molybdate.

4,239,649

CHOLESTEROL STANDARD

E. Melvin Gindler, and Louis M. Mezei, both of Rockford, Ill., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Jan. 25, 1979, Ser. No. 6,377

Int. Cl.³ G01N *33/16;* C09K *3/00*

U.S. Cl. 252—408 **9 Claims**

1. A standard solution useful in the quantitative determination of cholesterol consisting essentially of a predetermined amount of cholesterol, a water miscible alcohol present in an amount sufficient to dissolve said cholesterol to thereby form a solution, and a long chain alkyl substituted betaine solution in both water and alcohol and present in an amount such that said solution, as prepared, has extended mechanical stability and can be fashioned into an aqueous calibrator solution without precipitation of cholesterol.

4,239,650

PROCESS FOR THE MANUFACTURE OF A MIXED CATALYST

Rainer Franke, Frankfurt am Main, and Bernd Diedrich, Eschborn, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,320

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2752577

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **20 Claims**

1. A process for the production of a catalyst consisting of a compound containing a transition metal and an activator, which comprises reacting a halogen-containing titanium compound of the formula $TiX_n(OR_1)_{4-n}$, in which n is from 1 to 4, X is chlorine or bromine and R_1 is a hydrocarbon radical of from 1 to 12 carbon atoms with a metal alcoholate of the formula $[Me^1_x(OR)_v]Me^2_yMe^3_zH_w$, in which Me^1, Me^2, and Me^3 are the same or not all the same and each is a metal of main group I, II, III or IV or subgroup I, II, IV or V of the Periodic Table of the elements, R is a hydrocarbon radical of from 1 to 20 carbon atoms, x is an integer of from 1 to 5; y is an integer of from 0 to 2; z is an integer of from zero to 2; v is an integer of from 2 to 8; and w is either zero or 1, with the proviso that

$$(\text{valency of } Me^1)\cdot x+(\text{valency of } Me^2)\cdot y+(\text{valency of } Me^3)\cdot z+w=v;$$

washing the solid reaction product which is insoluble in hydrocarbons in an inert dispersion medium until halogen can no longer be detected in the dispersion medium after washing, reacting the washed product with an acid halide of an element of main group III or IV or subgroup IV of the Periodic Table, and reacting the acid halide reaction product with an organoaluminum compound.

4,239,651

CRACKING CATALYST AND METHOD OF PRODUCING THE SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Aug. 21, 1978, Ser. No. 935,628

Int. Cl.³ B01J *27/24, 27/02, 29/06*

U.S. Cl. 252—438 **12 Claims**

1. The process of producing a cracking catalyst which com-

prises forming a silica-alumina gel having a SiO_2:Al_2O_3 molar ratio from about 1.5 to 1.7 and associated with sodium ions and mixing said gel with an ammonium salt solution, separating an ammoniated gel from the solution, said gel containing NH_4+ ions associated with the gel in an amount in excess of about 3% by weight expressed as NH_3 and sodium expressed as Na_2O less than about 1% based on the gel on a volatile free basis and treating said ammoniated gel by exchanging the ammonium cation with a solution of alkaline earth metal salt at a pH of about 5.5 or less to reduce the NH_4 content of the gel to less than about 2.5% by weight expressed as NH_3 and the Na expressed as Na_2O to less than about 1% by weight of the exchanged gel all on a volatile free basis and separating said exchanged gel.

4,239,652

CATALYSTS FOR CATALYTIC HYDROREFORMING OR FOR PRODUCING AROMATIC HYDROCARBONS

Jean-Francois Le Page, Rueil-Malmaison; Germain Martino, Poissy, and Jean Miquel, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 29, 1979, Ser. No. 53,156

Claims priority, application France, Jun. 29, 1978, 78 20132

Int. Cl.³ B01J *27/08, 27/10*

U.S. Cl. 252—441 **3 Claims**

1. A catalyst containing an alumina carrier and, by weight with respect to the carrier, from 0.05 to 0.6% of at least one noble metal of the platinum family, from 0.005 to 5% of antimony, from 0.01 to 4% of a metal selected from gallium, indium and thallium and from 0.1 to 10% of halogen.

4,239,653

PROCESS FOR THE PREPARATION OF NON-PYROPHORIC PALLADIUM CATALYSTS

János Bodnár, Budapest, and György Lugosi, Felsogöd, György L. Nagg, all of Hungary, assignors to Chinoin Gyogyszer, Budapest, Hungary

Filed Nov. 27, 1978, Ser. No. 963,882

Int. Cl.³ B01J *21/18, 23/44*

U.S. Cl. 252—447 **18 Claims**

1. A process for the preparation of a non-phyrophoric palladium catalyst having controlled particle size and activity, comprising:

(a) suspending active charcoal of homogeneous pore distribution in a diluted solution of palladium salt or palladium salt complex in the presence of an alcohol to effect sorption of said palladium salts or palladium salt complex by said active charcoal, thereby forming a catalyst charcoal;

(b) filtering said catalyst charcoal from said solution of palladium salt or palladium salt complex followed by;

(c) treating the sorbed palladium or palladium salt complex with an alkali, thereby forming a hydroxide of palladium and thereafter;

(d) reducing the hydroxide of palladium to palladium, thereby forming a palladium catalyst.

4,239,654

HYDROCARBON CRACKING CATALYST AND PROCESS UTILIZING THE SAME

Elroy M. Gladrow, and William E. Winter, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 31, 1979, Ser. No. 44,394

Int. Cl.³ B01J *29/06, 29/08*

U.S. Cl. 252—455 Z **11 Claims**

1. A catalyst comprising:

(a) an ultrastable Y-type crystalline alumino-silicate zeolite having less than about 1 weight percent rare earth metals, calculated as the elemental metal, based on the zeolite;

(b) a small pore crystalline ZSM-type zeolite; and

(c) a catalytic inorganic oxide matrix.

4,239,655

PROCESS FOR THE PRODUCTION OF BONDED ZEOLITE BODIES

Takehisa Inoue, Tokyo, and Kazuo Tsunoi, Kamakura, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 5, 1979, Ser. No. 45,756

Claims priority, application Japan, Nov. 16, 1977, 52-136622

Int. Cl.³ B01J *29/06*

U.S. Cl. 252—455 Z **6 Claims**

1. A process for the production of bonded zeolite bodies which comprises mixing zeolite with water and polycarboxylic acid having at least two carboxyl groups and not more than ten carbon atoms except those of carboxyl groups, forming the mixture into shaped bodies, and drying and calcining the shaped bodies.

4,239,656

CATALYST FOR PURIFYING EXHAUST GASES AND CARRIER FOR THE CATALYST

Yoshiyasu Fujitani; Hideaki Muraki, both of Nagoya; Shiroh Kondoh, Aichi, and Kouji Yokota, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Apr. 4, 1979, Ser. No. 27,037

Claims priority, application Japan, Apr. 4, 1978, 53-40077; Apr. 12, 1978, 53-42743

Int. Cl.³ B01J *21/04, 23/10, 23/58*

U.S. Cl. 252—462 **11 Claims**

1. A catalyst for reducing nitrogen oxide, carbon monoxide and hydrocarbons in exhaust gases, consisting essentially of: a porous alumina-magnesia spinel carrier containing from 0.05 to 20% by weight of ceria based on the spinel, said porous carrier having an average pore diameter of 0.01 to 2 microns; and a metal supported thereon selected from the group consisting of platinum, palladium and mixtures thereof.

4,239,657

MANUFACTURE OF CARBONYL COMPOUNDS

Axel Nissen, Leimen; Gerd Heilen, Frankenthal; Ekkehard Sapper, Ludwigshafen; Werner Fliege, Otterstadt, and Arnold Wittwer, Ludwidshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 801,112, May 31, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,646

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625541

Int. Cl.³ B01J *23/80, 23/82, 23/84*

U.S. Cl. 252—464 **2 Claims**

1. A catalyst consisting essentially of (a) 3 to 50 percent by weight, calculated as metal, of a mixture of cobalt and nickel, (b) from 1 to 10 percent of zinc, calculated as oxide and (c) a catalytically active amount, of a metal selected from the group consisting of iron, arsenic, antimony, bismuth, gallium, indium, thallium, germanium, tin, lead, cadmium and mercury, on a chemically inert carrier, said catalyst being formed by absorbing on the carrier an aqueous solution of a soluble compound of each of (a) and (b), drying, calcining and reducing the so impregnated carrier and applying a compound of (c) to said impregnated carrier, which catalyst is thereafter pretreated by heating, annealing and reducing the impregnated carrier.

4,239,658

CATALYSTS FOR THE CONVERSION OF RELATIVELY LOW MOLECULAR WEIGHT HYDROCARBONS TO HIGHER MOLECULAR WEIGHT HYDROCARBONS AND THE REGENERATION OF THE CATALYSTS

Howard L. Mitchell, III, and Robert H. Waghorne, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 903,814, May 8, 1978, Pat. No. 4,172,810. This application Apr. 5, 1979, Ser. No. 27,246

Int. Cl.³ B01J *21/04, 23/10, 23/58, 23/64*

U.S. Cl. 252—465 **39 Claims**

1. A multi-functional regenerable catalyst-reagent composition suitable for the oligomerization of hydrocarbons which comprises (1) a Group VIII noble metal having an atomic number of 45 or greater, nickel, or a Group I-B noble metal having an atomic number of 47 or greater, (2) a Group VI-B metal oxide which is capable of being reduced to a lower oxide, and (3) a Group II-A metal selected from the group consisting of magnesium and strontium, composited with a spinel-coated refractory support, or calcium composited with a non-zinc containing spinel-coated refractory support.

4,239,659

DETERGENT COMPOSITIONS CONTAINING NONIONIC AND CATIONIC SURFACTANTS, THE CATIONIC SURFACTANT HAVING A LONG ALKYL CHAIN OF FROM ABOUT 20 TO ABOUT 30 CARBON ATOMS

Alan P. Murphy, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 15, 1978, Ser. No. 969,909

Int. Cl.³ C11D *1/835*

U.S. Cl. 252—524 **34 Claims**

1. A detergent composition, containing from 0 to about 20% phosphate materials, comprising from about 5% to about 100% of a surfactant mixture consisting essentially of:

(a) a nonionic surfactant having an HLB of from about 5 to about 17; and

(b) a cationic surfactant having the formula $R(R')_3N^+Z^-$, wherein R is an alkyl group containing an average of from about 20 to about 30 carbon atoms, each R′ is an alkyl or hydroxyalkyl group containing from 1 to 4 carbon atoms, or a benzyl group with no more than one R′ in a molecule being benzyl, and Z is an anion selected from the group consisting of halides, hydroxide, nitrate, sulfate, and alkyl sulfates;

the ratio, by weight, of said nonionic surfactant to said cationic surfactant being from about 3:1 to about 15:1.

4,239,660

DETERGENT COMPOSITION COMPRISING A HYDROLYZABLE CATIONIC SURFACTANT AND SPECIFIC ALKALINITY SOURCE

Gary W. Kingry, Nishinomiya, Japan, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 864,135, Dec. 23, 1977, abandoned. This application Dec. 13, 1978, Ser. No. 969,115

Int. Cl.³ C11D *1/835, 3/10, 3/04*

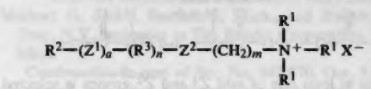
U.S. Cl. 252—528 **32 Claims**

1. A laundry detergent composition which comprises:

(a) from about 2% to about 95% of a surfactant mixture consisting essentially of:

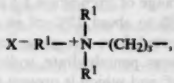
(1) a nonionic surfactant having an HLB of from about 5 to about 17; and

(2) a cationic surfactant selected from the group consisting of:

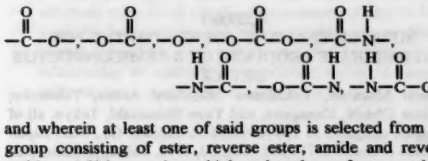


(i)

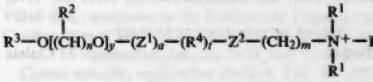
wherein each R^1 is C_1 to C_4 alkyl or hydroxyalkyl; R^2 is C_5 to C_{30} straight or branched chain alkyl, alkenyl, alkylbenzyl, or alkyl phenyl group or



wherein s is from 0 to 5; R^3 is C_1 to C_{20} alkylene or alkenylene; a is 0 or 1, n is 0 or 1, and a is 1 only when n is 1; m is from 1 to 5; Z^1 and Z^2 are each selected from the group consisting of:

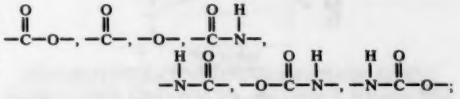


and wherein at least one of said groups is selected from the group consisting of ester, reverse ester, amide and reverse amide and X is an anion which makes the surfactant at least water-dispersible;

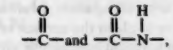


(ii)

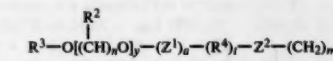
wherein each R^1 is C_1 to C_4 alkyl or hydroxyalkyl; each R^2 is either hydrogen or C_1 to C_3 alkyl; R^3 is C_4 to C_{30} straight or branched chain alkyl, alkenyl or alkylbenzyl, R^4 is C_1 to C_{10} alkylene or alkenylene; n is from 2 to 4; y is from 1 to 20; a is 0 or 1, t is 0 or 1, and a can be 1 only when t is 1; m is from 1 to 5; Z^2 is selected from the group consisting of



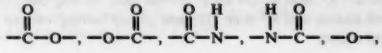
Z^1 is selected from the group consisting of



said selections being made so that



is an alkyl or alkenyl group which can be interrupted by only structures selected from the group consisting of:



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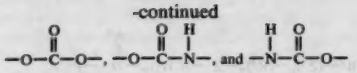


and wherein at least one of said Z^1 and Z^2 groups is selected from the group consisting of ester, reverse ester, amide, and reverse amide; and X is an anion which makes the surfactant at least water-dispersible; and

(iii) mixtures thereof;

wherein the ratio of said nonionic surfactant to said cationic surfactant is in the range of from about 1:1 to about 100:1; and

(b) from about 1% to about 25% of an inorganic alkaline component selected from the group consisting of borax decahydrate, borax pentahydrate, sodium carbonate, and mixtures thereof, and which is present in an amount such that the detergent composition forms a solution having a pH of from about 8 to about 10 within about 3 minutes after it is placed in 100° F. water at a concentration of about 0.15%.

4,239,661

SURFACE-TREATING AGENT ADAPTED FOR INTERMEDIATE PRODUCTS OF A SEMICONDUCTOR DEVICE

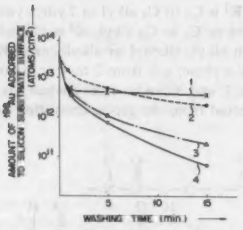
Hisashi Muraoka, Yokohama; Masafumi Asano, Yokosuka; Taizo Ohashi, Kanagawa, and Yuzo Shimazaki, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Division of Ser. No. 718,911, Aug. 30, 1976. This application Jul. 21, 1978, Ser. No. 927,139

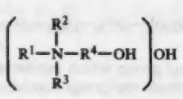
Claims priority, application Japan, Nov. 26, 1975, 50-140721; Nov. 26, 1975, 50-140722; Nov. 26, 1975, 50-140723; Nov. 26, 1975, 50-140724; Nov. 26, 1975, 50-140725; Nov. 26, 1976, 50-140726

Int. Cl.³ C11D *3/26, 3/30, 7/32*

U.S. Cl. 252—541 **32 Claims**



1. A method for cleaning the surface of an intermediate product obtained in the manufacture of a semiconductor device which comprises bringing the surface of said intermediate product into contact with an aqueous solution at a temperature and for a time effective to clean the surface of said intermediate product, the aqueous solution containing an effective amount within the range of 0.01 to 20% by weight of at least one trialkyl(hydroxyalkyl) ammonium hydroxide expressed by the formula:



where R^1, R^2, and R^3 are alkyl groups each having one to four carbon atoms, and R^4 is an alkylene group having two to four carbon atoms.

4,239,662

LIQUID DETERGENT COMPOSITIONS

Osamu Okumura, Funabashi; Takenobu Sakatani; Toshinobu Kashiwada, both of Chiba, and Kiyotaka Tokuyama, Funabashi, all of Japan, assignors to The Lion Fat and Oil Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,519

Claims priority, application Japan, Feb. 17, 1978, 53-17237

Int. Cl.³ C11D *1/14, 1/83*

U.S. Cl. 252—555 **4 Claims**

1. A liquid detergent composition consisting essentially of:

(a) water

(b) from 5 to 40% by weight of a magnesium α-olefinsalfonate having from 10 to 20 carbon atoms,

(c) from 1 to 8% by weight of an addition product of a primary alcohol having from 3 to 13 carbon atoms with an average of from 1 to 20 moles of ethylene oxide per mole of said primary alcohol, or an addition product of a secondary alcohol having from 9 to 18 carbon atoms with an average of from 3 to 15 moles of ethylene oxide per mole of said secondary alcohol, and

(d) from 0.2 to 5% by weight of magnesium sulfate, said constituents b, c and d being in dissolved form and the weight thereof being by weight of the composition.

4,239,663

METHOD, COMPOSITION AND PRODUCT WITH IMPROVED ADHESION BETWEEN A METAL MEMBER AND A CONTIGUOUS RUBBER SKIM STOCK

Frederick J. Ravagnani, Uniontown, and Steven E. Schonfeld, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 824,767, Aug. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 824,780, Aug. 15, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 965,451

Int. Cl.³ C08L *7/00, 9/00*

U.S. Cl. 260—5 **12 Claims**

1. In a cured rubber skim stock of conventional composition, said stock being bonded to at least one metal member contained within said stock, the improvement wherein a minor proportion of para-aminobenzoic acid or a cobalt salt of para-aminobenzoic acid is incorporated into said stock prior to curing.

4,239,664

ANTI-THROMBOGENIC PVP-HEPARIN POLYMER

Lin-Nar Teng, and Gottfried Schmer, both of Seattle, Wash., assignors to Research Corporation, New York, N.Y.

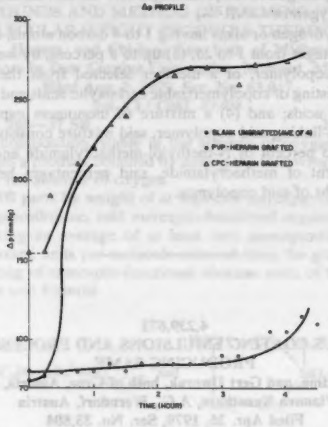
Continuation-in-part of Ser. No. 778,974, Mar. 18, 1977, abandoned. This application Oct. 31, 1978, Ser. No. 956,049

Int. Cl.³ C08L *5/10*

U.S. Cl. 260—17.4 R **1 Claim**

1. An anti-thrombogenic chloroform soluble polymer compound where the PVP has a molecular weight of 10,000 to 360,000 and heparin has a normal molecular weight of 6,000 to 20,000 consisting essentially of a covalently bound poly-N-

vinyl pyrrolidinone (PVP)-heparin formed by activating PVP with thionyl chloride to form an imidoyl ion and bonding



heparin, said polymer compound being useful as a protracted i.v. therapeutic drug in humans.

4,239,665

NOVOLAK RESINS CONTAINING LACTOSE AND/OR GALACTOSE

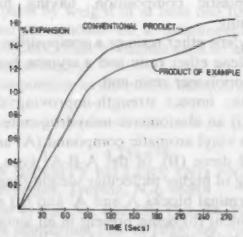
Alan C. Richards, Wokingham, and Riaz A. Khan, Sonning, both of England, assignors to Talres Development (N.A.) N.V., Curacao, Netherlands Antilles

Filed May 30, 1979, Ser. No. 43,759

Claims priority, application United Kingdom, May 31, 1978, 25586/78

Int. Cl.³ C08L *5/00*

U.S. Cl. 260—17.2 **12 Claims**



1. A method of preparing a novolak resin, wherein a phenol, formaldehyde and a reducing sugar selected from the group consisting of lactose, galactose and mixtures thereof are condensed in an acid catalysed reaction.

4,239,666

LIGNIN MODIFIED FRICTION MATERIAL

Michael G. Jacko, Southfield, Mich., and Robert F. Gager, Troy, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 842,870, Oct. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 570,106, Apr. 21, 1975, abandoned. This application Mar. 2, 1979, Ser. No. 17,012

Int. Cl.³ C08L *61/10, 97/00*

U.S. Cl. 260—17.5 **13 Claims**

1. An organic friction material comprising:

10 to 55% by weight of asbestos;

1 to 25% by weight of organic modifier materials selected from a group consisting of rubber scraps, latex, crude molasses, and asphaltic base materials;

1 to 50% by weight of inorganic modifier materials selected from a group consisting of graphite, carbon, barytes, whiting, talc, rottenstone, silica, and alumina;

0 to 25% by weight of cashew nut powders;

10 to 30% by weight of thermosetting phenolic aldehyde resin; and

2 to 15% by weight of lignin, said lignin and said phenolic aldehyde resin being cured in the presence of heat to form a binder for retaining the asbestos, inorganic modifiers, organic modifiers, and cashew nut powders in a fixed relationship to establish a composition having a substantially uniform coefficient of friction up to 650° F.

4,239,667

METHOD FOR PREPARING POLYURETHANE COATINGS FROM A NEUTRAL SUBSTANCE OF MIXED SOAP

Väinö Erä, , assignors to Oy Kaukas AB, Lappeenranta, Finland

Continuation of Ser. No. 870,300, Jan. 18, 1978, abandoned. This application Jan. 24, 1979, Ser. No. 6,309

Claims priority, application Finland, Feb. 16, 1977, 770496

Int. Cl.³ C08G *18/30*

U.S. Cl. 260—18 TN **4 Claims**

1. A method for preparing polyurethane coatings from a polyol component, a triisocyanate, and a catalyst by forming a mixture of said components and by polymerization of same at a raised temperature, wherein the polyol component has a hydroxyl number in the range of 60 to 100 and consists essentially of fatty alcohols and sterols.

4,239,668

ORGANOTHIOL-CONTAINING SILOXANE RESINS

Harold A. Clark, Cape Coral, Fla., and Loren A. Haluska, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 20, 1978, Ser. No. 962,362

Int. Cl.³ C08J *3/02, 83/04*

U.S. Cl. 260—29.2 M **2 Claims**

1. A pigment-free aqueous composition consisting essentially of a dispersion of colloidal silica in lower aliphatic alcohol-water solution, or a dispersion of colloidal silica in ether-esters of ethylene or propylene glycol-water solution, of a partial condensate of a silanol of the formula $RSi(OH)_3$ in which R is selected from HSR'— and $(HS)_2R'$— wherein R' is selected from a group consisting of a divalent or trivalent aliphatic hydrocarbon radical having 1–6 carbon atoms and phenylene, the colloidal silica being present in the amount of 34 to 50 weight percent and the amount of $RSi(OH)_3$ being 50 to 66 weight percent both being based on the total solids in the composition, said composition containing 10–50 weight percent solids, said composition containing sufficient acid to provide a pH in the range of 2.5 to 5.5.

4,239,669

AQUEOUS EMULSION POLYMERIZATION OF VINYL MONOMERS USING MIXTURES OF EMULSIFIERS

Charles M. Scott, Fair Oak, and Alan A. J. Feast, Chandlers Ford, both of England, assignors to I.S.R. Holding SARL, Luxembourg

Filed Dec. 19, 1978, Ser. No. 971,095

Claims priority, application United Kingdom, Dec. 19, 1977, 52725/77

Int. Cl.[3] C08F *12/08*; C08L *25/04*

U.S. Cl. 260—29.6 R 13 Claims

1. An emulsion polymerisation process which comprises (1) subjecting an intimate aqueous dispersion of monomer material comprising (A) at least one vinyl aromatic monomer selected from the group consisting of styrene, ar-alkyl styrene, halo-styrene, alpha methyl styrene and alpha ethyl styrene as the only monomer; (B) a mixture of at least one vinyl aromatic monomer selected from the group consisting of styrene, ar-alkyl styrene, halo-styrene, alpha methyl styrene and alpha ethyl styrene with not to exceed 30% by weight of at least one unsaturated nitrile or (C) a mixture of at least one vinyl aromatic monomer selected from the group consisting of styrene, ar-alkyl styrene, halo-styrene, alpha methyl styrene and alpha ethyl styrene with not to exceed about 40 mole % of at least one conjugated diene, the ratio of monomers in mixtures of (B) or (C) being such as to yield a thermoplastic product, with 1.0 to 2.0 parts per hundred parts of monomer on a weight basis of primary emulsifier which is the sodium or potassium salt of an organic carboxylic and having 12 to 20 carbon atoms or of rosin acid, 1.0 to 2.0 parts per hundred parts of monomer of secondary emulsifier and which is an alkali metal salt of a naphthalene sulphonic acid-formaldehyde condensate and free radical initiator to a rapid polymerisation in a continuous flow agitated reaction such that the reaction is carried out at 80° C. to 100° C. and (2) continuously removing the formed latex.

4,239,670

FLAME RETARDANT LATEXES

David S. Moorman, Houston, Tex., assignor to Witco Chemical Company, New York, N.Y.

Filed Sep. 8, 1978, Ser. No. 940,472

Int. Cl.[3] C08L *31/04, 33/08, 9/08, 9/10*

U.S. Cl. 260—29.6 MP 10 Claims

1. In a latex otherwise unstable to diammonium phosphate, the improvement wherein said latex has added thereto an effective flame-retardant amount of an additive comprising from one to five parts by weight of ammonium bromide to one part by weight of diammonium phosphate.

4,239,671

DISPERSIONS OF HYDROPHILIC ACRYLIC RESINS

Herbert Fink, Bickenbach; Klaus Huebner, Ober-Ramstadt-Eiche; Horst Dinklage, Darmstadt-Arheilgen, and Hans Ottofrickenstein, Darmstadt-Eberstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

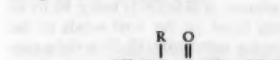
Continuation-in-part of Ser. No. 955,796, Oct. 30, 1978, abandoned. This application Mar. 13, 1979, Ser. No. 20,037

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1978, 2749386

Int. Cl.[3] C08L *31/02*

U.S. Cl. 260—29.6 TA 7 Claims

1. An aqueous dispersion of a hydrophilic copolymer prepared by polymerizing, in an aqueous medium, a monomer mixture comprising: (1) a member selected from the group consisting of lower alkyl acrylates and methacrylates; (2) a compound of the formula



wherein

R is hydrogen or methyl,

R^1 is hydrogen or alkyl having 1 to 4 carbon atoms,

Y is oxygen or $—NR^2—$,

R^2 is hydrogen or alkyl having 1 to 4 carbon atoms, and n is an integer from 1 to 25; (3) up to 8 percent, by weight of the copolymer, of a member selected from the group consisting of copolymerizable carboxylic acids and salts of such acids; and (4) a mixture of monomers capable of cross-linking said copolymer, said mixture consisting of 1 to 1.5 percent of N-methylol-methacrylamide and 0.5–1 percent of methacrylamide, said percentages being by weight of said copolymer.

4,239,672

AQUEOUS COATING EMULSIONS AND PROCESS FOR PRODUCING SAME

Herbert Zima, and Gert Dworak, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Apr. 26, 1979, Ser. No. 33,804

Claims priority, application Austria, Apr. 27, 1978, 3022/78

Int. Cl.[3] C08L *47/00*

U.S. Cl. 260—29.7 H 17 Claims

1. A coating composition comprising an acidic, anionic emulsifying agent containing aqueous emulsion of an adduct of an alpha,beta-ethylenically unsaturated carboxylic acid to an alka-diene polymer having a micro-structure of 50 to 100% of 1,4-cis-, 0–50% of 1,4-trans-, and 0–50% of 1,2-vinylconfiguration, and an average molecular weight of between 500 and 10,000 (measured by vapor pressure osmosis), said adduct having an acid content calculated in maleic anhydride units of 12.5 to 25% by weight of the adduct.

4,239,673

COMPOSITION OF A POLYPHENYLENE ETHER, A BLOCK COPOLYMER OF A VINYL AROMATIC COMPOUND AND A CONJUGATED DIENE AND A POLYOLEFIN

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 839,106, Oct. 3, 1977, Pat. No. 4,166,055. This application Apr. 3, 1979, Ser. No. 26,657

Int. Cl.[3] C08K *5/49, 53/00*

U.S. Cl. 260—30.6 R 18 Claims

1. A thermoplastic composition, having high impact strength, comprising

(a) a polyphenylene ether resin or a composition comprising a polyphenylene ether resin and a styrene homopolymer or random copolymer resin and

(b) a synergistic, impact strength-improving combination comprising (i) an elastomeric unhydrogenated block copolymer of a vinyl aromatic compound (A) and $(A)^1$ and a conjugated diene (B), of the A-B-A^1 type, the center block B being of higher molecular weight than that of the combined terminal blocks A and A′ and (ii) a polyolefin resin, component (b) being present in an amount of from about 5 to about 30% by weight of the total resinous components of the composition.

16. A composition as defined in claim 1 including up to about 25% by weight of a plasticizer.

17. A composition as defined in claim 16 wherein said plasticizer is triphenyl phosphate.

4,239,674

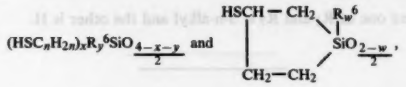
OXYGEN-CURABLE MERCAPTOORGANOSILOXANE COMPOSITIONS CATALYZED BY COBALTOCENE COMPOUNDS AND METHOD OF FORMING HIGHER MOLECULAR WEIGHT PRODUCTS THEREFROM

Gary R. Homan, and Chi-long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 2, 1979, Ser. No. 63,017
Int. Cl.³ C08L 83/08
U.S. Cl. 260—37 SB 24 Claims

1. A composition, stable in the absence of oxygen, which comprises a product obtained by mixing the following substantially in the absence of oxygen

(A) 100 parts by weight of at least one mercapto-functional organosiloxane, said mercapto-functional organosiloxane having an average of at least two mercapto-functional siloxane units per molecule selected from the group consisting of mercapto-functional siloxane units of the average unit formula



any other siloxane units present having the average unit formula

wherein

each R^2 is a hydroxyl radical or an organic radical selected from the group consisting of R^6 and 3,3,3-trifluoropropyl radicals,

each R^6 is R^5 or OR^1,

each R^5 is an alkyl radical of 1 to 4 inclusive carbon atoms or phenyl radical,

each R^1 is an alkyl radical of 1 to 4 inclusive carbon atoms,

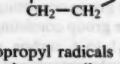
n has a value of from 2 to 4 inclusive,

w has a value of from 0 to 1 inclusive,

x has a value of from 1 to 2 inclusive,

y has a value of from 0 to 2 inclusive,

z has a value of from 0 to 3 inclusive and the sum of x+y has a value of from 1 to 3 inclusive, and the ratio of total R^5, HSC_nH_{2n}—,



and 3,3,3-trifluoropropyl radicals to silicon atoms in the mercapto-functional organosiloxane is in the range of 0.98/1 to 3.00/1;

(B) 0-200 parts by weight of at least one filler; and

(C) a catalytic amount of a cobaltocene of a formula $(R^3C_5H_4)Co(C_5H_4R^4)$ wherein each R^3 and R^4 is a hydrogen atom or methyl.

22. The composition as claimed in claim 1 which contains at least one filler.

4,239,675

LOW DENSITY FILLERS AND PIGMENTS

Thomas H. Ferrigno, Trenton, N.J. 08618

Continuation of Ser. No. 842,436, Oct. 14, 1977, abandoned.
This application Feb. 2, 1979, Ser. No. 8,901
Int. Cl.³ C08L 6/20
U.S. Cl. 260—39 SB 14 Claims

1. A product adapted for use as a filler and pigment in paints, plastics, and caulking compositions comprising from 65% to 85% by weight of particulate material having an average equivalent spherical diameter from about 0.1 to about 30 micrometers and from about 15% to 35% by weight of aldehyde condensate resin including additives, said product being generally spheroidal and having voids therein, said product having a density which is at least about 20% to 70% less than that of the materials of which the product is composed.

4,239,676

COATING COMPOSITIONS COMPRISING POLYMER BLENDS

Walter J. Wilkinson, Wilbraham, and Irving Serlin, Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed May 11, 1979, Ser. No. 38,048
Int. Cl.³ C08K 3/36; C08L 61/28
U.S. Cl. 260—39 P 10 Claims

1. A coating composition comprising an intimate blend of from about 50 to about 90 parts by weight of a poly(vinyl acetal), from about 5 to about 40 parts by weight of an alkoxymethyl polyaminotriazine and from about 5 to about 30 parts by weight of an oligomer of styrene or α-methylstyrene of molecular weight in the range of about 300 to about 500.

4,239,677

MODIFIED POLYESTER COMPOSITIONS

Ronald L. Dieck, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 8, 1979, Ser. No. 1,539
Int. Cl.³ C08K 3/40; C08L 67/00, 67/06
U.S. Cl. 260—40 R 20 Claims

1. A thermoplastic composition comprising:

(a) a polyester composition comprising:

(i) a poly(1,4-butylene terephthalate) resin;

(ii) a blend of a poly(1,4-butylene terephthalate) resin and a poly(ethylene terephthalate) resin;

(iii) a block copolyester of poly(1,4-butylene terephthalate) and an aromatic with aliphatic or aliphatic polyester;

(iv) a blend of (iii) and a poly(ethylene terephthalate) resin; or

(v) a blend of (iii) and a poly(1,4-butylene terephthalate) resin; and

(b) an impact modifier therefor comprising a combination of:

(i) a linear or branched rubbery polyester end blocked copolymer of a vinyl aromatic and a conjugated diene, a polyester end blocked homopolymer of a conjugated diene, vinyl aromatic or a mixture thereof and

(ii) an aromatic polycarbonate resin, in an amount of up to 60 parts per 100 parts by weight of (a) and (b) together.

12. A composition as defined in claim 1 which also includes (c) a filler, reinforcing agent or a mixture thereof in an amount of from about 1 to about 60 parts by weight per 100 parts by weight of (a), (b) and (c) together.

13. A thermoplastic composition as defined in claim 12 wherein component (c) comprises (c)(i) fibrous glass.

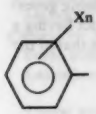
4,239,678

FLAME RETARDANT THERMOPLASTIC COMPOSITIONS

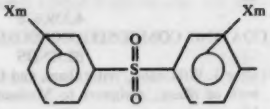
Joseph B. Williams, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 6, 1978, Ser. No. 867,450
Int. Cl.³ C08K 5/42
U.S. Cl. 260—42.18 18 Claims

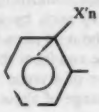
1. A flame retardant thermoplastic composition comprising an organic sulfonate flame retardant additive of the general formula $RSO_3—M^+$ or $(RSO_3—)_2M'^{++}$, where M^+ is an alkali metal ion, M'^{++} is an alkaline earth metal ion, and R is chosen from the group consisting of



and



where each X is independently chosen from the group consisting of fluorine, bromine, iodine, NO_2 and



where X' is the same as X, and n=0–5, m=0–4 and n and m are not more than 1 on any single carbon atom;
in admixture with a polymer, or a blend of polymers, selected from the group consisting essentially of polyarylsulfone, polyarylethersulfone, polyphenylsulfide, blends of a polyarylethersulfone and a polyarylsulfone, blends of a polyarylethersulfone and a polyphenylsulfide, blends of a polyarylsulfone and a polyphenylsulfide, blends of a acrylonitrile-butadiene-styrene copolymer (ABS) and a polyarylsulfone, blends of an acrylonitrile-butadiene-styrene copolymer (ABS) and a polyarylethersulfone, blends of an acrylonitrile-butadiene-styrene copolymer (ABS) and a polyphenylsulfide, and blends of an acrylonitrile-butadiene-styrene copolymer (ABS), together with two or three polymers selected from the group consisting of polyarylsulfones, polyarylethersulfones and polyphenylsulfides.

4,239,679

HIGH BULK DENSITY RIGID POLY(VINYL CHLORIDE) RESIN POWDER COMPOSITION AND PREPARATION THEREOF

James A. Rolls, Painesville, and Kenneth L. Brenis, South Euclid, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 27, 1979, Ser. No. 52,458
Int. Cl.³ C08K *3/26*
U.S. Cl. 260—42.49 **8 Claims**

1. In a method for preparing a densified rigid poly(vinyl chloride) resin powder composition which comprises blending together a particulate, suspension-polymerized poly(vinyl chloride) resin and, based on the weight of the resin, from 0.10 to 7 percent of a heat stabilizer therefor, from 0–20 percent of resinous impact modifier, from 0.1–5 percent of nonresinous lubricant, from 0 to about 5 percent of resinous processing aid and from 0.1–20 percent of filler in a high shear mixing apparatus until the temperature of the blending mixture is raised by frictional heat to a temperature ranging from 320°–360° F. prior to removing the blended composition from the mixing apparatus and subsequently cooling said composition with agitation, the improvement which comprises adding from 0 percent to about 80 percent of the total filler requirement to the blending composition during the high shear mixing thereof, and thereafter incorporating from about 20 percent to 100 percent of said total filler requirement into the composition after it has been cooled to a temperature no greater than 175° F. in the cooler, whereby a rigid poly(vinyl chloride) resin powder composition having satisfactory free flow characteristics for application in multi-screw extrusion equipment is produced.

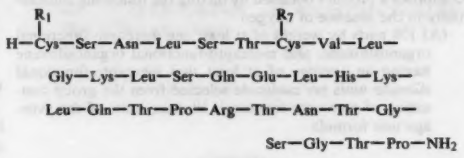
4,239,680

SYNTHESIS OF BIOLOGICALLY ACTIVE PEPTIDES

John L. Hughes, Kankakee; Jay K. Seyler, Bourbonnais, and Robert C. Liu, Kankakee, all of Ill., assignors to Armour and Company, Phoenix, Ariz.

Continuation of Ser. No. 722,747, Sep. 13, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,456
Int. Cl.³ C07C *103/52*; C08L *37/00*
U.S. Cl. 260—112.5 T **2 Claims**

1. A peptide having the structure:



where one of R_1 and R_7 is S-n-alkyl and the other is H.

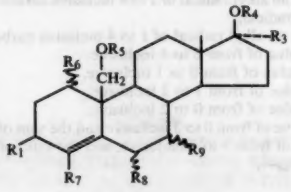
4,239,681

ANDROST-4-EN-19-OLS

Joyce F. Grunwell, Hamilton, and Vladimir Petrow, Cincinnati, both of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 329,849, Feb. 5, 1973, abandoned. This application Apr. 15, 1974, Ser. No. 461,011
Int. Cl.³ C07J *7/00*
U.S. Cl. 260—239.55 R **4 Claims**

1. An androst-4-en-19-ol having the formula



wherein

R_1 is selected from the group consisting of oxo and hydroxy;

R_3 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, lower alkenyl having from 2 to 6 carbon atoms and lower alkynyl having from 2 to 6 carbon atoms, and R_3 and OR_4 when taken together is oxo;

R_4 and R_5 are each selected from the group consisting of hydrogen, lower alkyl having from 1 to 3 carbon atoms, trialkylsilyl in which the alkyl group has from 1 to 5 carbon atoms, triphenylsilyl, 2-tetrahydropyranyl, 4-tetrahydropyranyl, 1-cycloalkenyl having from 5 to 7 carbon atoms, 1-methoxycycloalkyl and 1-ethoxycycloalkyl in which the cycloalkyl group has from 5 to 7 carbon atoms, with the proviso that R_4 and R_5 cannot both be hydrogen at the same time, and with the further proviso that when R_4 is 2-tetrahydropyranyl and R_6, R_7, R_8 and R_9 are all hydrogen, then R_3 and R_5 cannot both be hydrogen and R_1 cannot be oxo;

R_6, R_7, R_8 and R_9 are hydrogen and methyl with the proviso that when R_1 is oxo, R_4 is hydrogen, acyl or when taken together with R_3 is oxo, R_5 is hydrogen and R_9 is methyl, then R_6, R_7 and R_8 cannot all be hydrogen at the same time.

4,239,682

PURIFICATION OF CAPROLACTAM

Harry Danziger, and Bernd-Ulrich Kaiser, both Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 10, 1976, Ser. No. 740,416

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1975, 2550934

Int. Cl.³ C07D *20/16*

U.S. Cl. 260—239.3 A 2 Claims

1. A process for the purification of acid-containing crude caprolactam obtained by the rearrangement of cyclohexanone oxime, which comprises mixing the crude caprolactam with from 0.8 to 2.0 equivalents of a base, based on the acid in the crude caprolactam, so as to adjust the pH to from 4 to 11, from 3 to 6 parts by weight of toluene, based on the caprolactam, and from 2 10 parts by weight of water, based on the inorganic constituents, resulting in the formation of an organic phase and an aqueous phase having two layers; and removing the upper aqueous layer which contains substantially all the impurities.

4,239,683

PYRROLO BENZODIAZEPINE COMPOUNDS

Atuyuki Takanabe; Yoshio Arakawa, both of Hirakata; Yoshio Kagitani, Kashihara; Yasuo Ueda, Hirakata; Daisuke Satoh, Tokushima, and Nobuhiko Komatsu, Tokyo, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

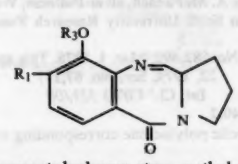
Division of Ser. No. 947,418, Oct. 2, 1977, Pat. No. 4,185,016. This application May 25, 1979, Ser. No. 42,449

Claims priority, application Japan, Dec. 27, 1977, 52/156684

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—239.3 T 7 Claims

1. A compound represented by the following formula:



wherein R_1 represents hydrogen atom, methyl group, hydroxy group or methoxy group; and R_3 represents hydrogen atom or acetyl group.

4,239,684

1,5'-BENZODIAZEPINE-2-ONES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

Oskar Bub, Ludwigshafen am Rhein, Fed. Rep. of Germany, assignor to Knoll AG, Ludwigshafen am Rhein, Fed. Rep. of Germany

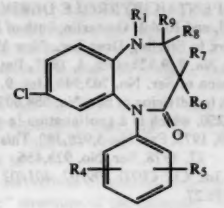
Division of Ser. No. 765,696, Feb. 4, 1977, Pat. No. 4,108,852, which is a continuation of Ser. No. 020,413, Mar. 17, 1970, abandoned. This application Jun. 2, 1978, Ser. No. 911,831

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1969, 1913536; Oct. 24, 1969, 1953647

Int. Cl.³ C07D *243/12;* A61K *31/55*

U.S. Cl. 424—244 17 Claims

1. A 1-aryl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepin-2-one of the formula



wherein R_1 is hydrogen, lower alkyl, or unsaturated lower aliphatic hydrocarbon; R_4 and R_5 are the same or different and each is hydrogen, halogen, lower alkyl, lower alkoxy, or trifluoromethyl, but if one of R_4 and R_5 is halogen or trifluoromethyl and the other of R_4 and R_5 is hydrogen, then the halogen or trifluoromethyl substituent is in the para-position; and R_6, R_7, R_8, and R_9 are the same or different and each is hydrogen or lower alkyl.

16. The method of producing a sedative sedative effect in a patient which comprises orally administering to said patient an effective amount of a compound as in claim 1.

4,239,685

PROCESS FOR THE PREPARATION OF PHTHALOCYANINE PIGMENTS

Daniel Pigasse, Chantilly, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Feb. 14, 1979, Ser. No. 12,169

Claims priority, application France, Feb. 21, 1978, 78 04832

Int. Cl.³ C09B *47/04*

U.S. Cl. 260—314.5 17 Claims

1. A process for the preparation of a phthalocyanine pigment from a press paste of phthalocyanine obtained by hydrolysis of a sulphuric solution of phthalocyanine, which consists in incorporating while stirring in said press paste a member selected from the group consisting of from 1% to 20% by weight with respect to the weight of phthalocyanine of a water-insoluble crystallizing solvent and a mixture of said water-insoluble crystallizing solvent with from 1% to 20% by weight with respect to the phthalocyanine of a non-crystallizing solvent, then removing said solvent or solvents and drying the paste, and collecting the pigments thus obtained.

4,239,686

PROCESS FOR PRODUCING PHTHALIMIDO DERIVATIVES

Teruyuki Misumi; Kyogo Tanaka, both of Yokohama, and Osamu Okuno, Kamakura, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1978, Ser. No. 962,639

Int. Cl.³ C07D *209/50*

U.S. Cl. 260—325 PH 18 Claims

1. A process for producing a 3-iminohaloisoinodoline-1-one which comprises treating a halophthalodinitrile with

(a) a reagent selected from the group consisting of ammonia, an organic amine, or mixtures thereof, and

(b) hydrogen peroxide,

in a treatment medium comprising a mixture of water and water-miscible organic solvent.

4,239,687

CYCLOPENTA[C]PYRROLE DERIVATIVES

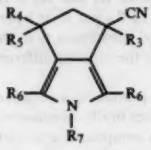
Malcolm R. Bell, and Rudolf Oesterlin, both of East Greenbush, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 839,328, Oct. 4, 1977, Pat. No. 4,140,854, which is a division of Ser. No. 703,949, Jul. 9, 1976, Pat. No. 4,098,797, which is a division of Ser. No. 558,807, Mar. 17, 1975, Pat. No. 4,008,250, which is a continuation-in-part of Ser. No. 346,005, Mar. 29, 1973, Pat. No. 3,928,380. This application Jul. 27, 1978, Ser. No. 928,456

Int. Cl.[3] C07D *209/02, 401/02*

U.S. Cl. 260—326.27 5 Claims

1. A compound having the formula



where each of R_3, R_4 and R_5 is hydrogen or methyl; each R_6 group is the same or different hydrogen, formyl, and lower-alkane-1,3-diol ketals thereof, hydroxymethyl, carboxy, —CO—O-lower-alkyl, chloromethyl, dichloromethyl, trichloromethyl, hydroxycyanomethyl or lower-alkyl; and R_7 is lower-alkylene-CO—O-lower-alkyl or 2-pyridyl.

4,239,688

HERBICIDAL N-(HALOACETYL)-N-(N'-METHYLENEPYRROLIDONYL-2-MERCAPTOALKYLANILINES

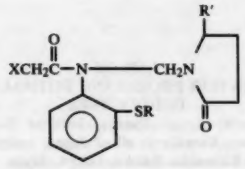
Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,354

Int. Cl.[3] A01N *9/22;* C07D *207/27*

U.S. Cl. 260—326.43 16 Claims

1. Herbicidal compounds having the formula:



where

R is alkyl having 1–6 carbon atoms, alkenyl having 2–6 carbon atoms, cycloalkyl having 4–6 carbon atoms, unsubstituted or substituted with alkyl of 1–4 carbon atoms, or alkyleneoxyalkyl of 2–8 carbon atoms,

R' is hydrogen or alkyl of 1–3 carbon atoms, and

X is chloro or bromo.

4,239,689

TOTAL SYNTHESIS OF THE UTERO-EVACUANT SUBSTANCE D,L-ZOAPATANOL

Vinayak V. Kane, Princeton, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 18, 1978, Ser. No. 970,727

Int. Cl.[3] C07D *313/04*

U.S. Cl. 260—333 4 Claims

A method for the synthesis of racemic 2S*, 3R*-6E-(2"-hydroxyethylidene)-2-methyl-2-(4',8'-dimethyl-5'-oxo-7'-nonenyl)-oxepan-3-ol is described. The naturally occurring product, 2S, 3R-6E-(2"-hydroxyethylidene)-2-methyl-2-(4',8'-dimethyl-5'-oxo-7'-nonenyl)-oxepan-3-ol, is one of the active components of the zoapatle plant.

4,239,690

ANTIBIOTICS PRODUCED BY *CYTOSPORA SP.* W.F.P.L. 13A

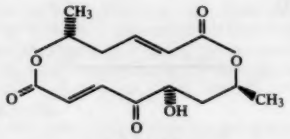
Sarangamat Gurusiddaiah; Robert C. Ronald; James A. Magnuson, and Bruce A. McFadden, all of Pullman, Wash., assignors to Washington State University Research Foundation, Pullman, Wash.

Division of Ser. No. 882,492, Mar. 1, 1978. This application Oct. 22, 1979, Ser. No. 87,177

Int. Cl.[3] C07D *321/00*

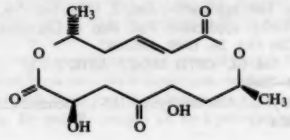
U.S. Cl. 260—340.2 4 Claims

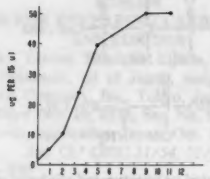
1. A macrocyclic polylactone corresponding to the formula:



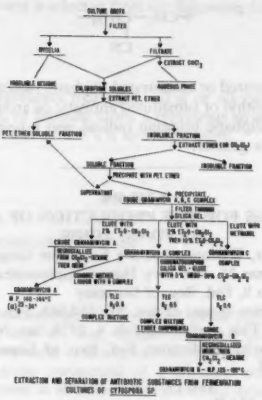
and pharmacalogically acceptable esters thereof.

4. A macrocyclic polylactone corresponding to the formula





ANTIBIOTIC ACTIVITY IN CULTURE FILTRATE OF STREPTOMYCES SP. DURING AEROBIC GROWTH.



EXTRACTION AND SEPARATION OF ANTIBIOTIC SUBSTANCES FROM FERMENTATION CULTURES OF STREPTOMYCES SP.

4,239,691

CONVERSION OF NON-ALPHA-TOCOPHEROLS TO ALPHA-TOCOPHEROLS

Donald R. Nelan, and Charles H. Foster, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,555
Int. Cl.³ C07D *311/72*
U.S. Cl. 260—345.5 **9 Claims**

1. In the process for producing alpha-tocopherol from non-alpha-tocopherols having at least one hydrogen atom in the benzene nucleus comprising reacting the tocopherol with a formaldehyde source, the improvement comprising carrying out said reaction at a temperature of at least about 175° C. in the presence of a catalytic amount of an acidic ion exchange resin and subjecting the reaction mixture to catalytic hydrogenation.

4,239,692

OLIGOMERIC IMINIC DERIVATIVES OF ALUMINUM HYDRIDE AND METHOD FOR THEIR PREPARATION

Giovanni Dozzi, Milan; Salvatore Cucinella, and Tito Salvatori, both of San Donato Milanese, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Mar. 15, 1979, Ser. No. 20,837
Claims priority, application Italy, Apr. 12, 1978, 22221 A/78
Int. Cl.³ C07F *5/06*
U.S. Cl. 260—448 R **2 Claims**

1. Oligomeric derivatives of aluminum having a tridimensional "open cage" structure of the formula:

$$[HAlN—R'—XR''_m)_i\ (H_2AlNH—R'—XR''_m)_j]$$

wherein:

(a) R′ is (i) a linear, branched or aryl-substituted bivalent hydrocarbon aliphatic radical having from 1 to 20 carbon atoms, (ii) a bivalent cycloaliphatic radical or alkyl- or arylsubstituted bivalent cycloaliphatic radical or (iii) an aromatic or alkylsubstituted aromatic bivalent radical having from 1 to 20 carbon atoms,

(b) X is a nitrogen or an oxygen atom,

(c) R″ is (i) a linear, branched or aryl-substituted aliphatic hydrocarbon radical having from 1 to 20 carbon atoms, (ii) a cycloaliphatic hydrocarbon radical or alkyl or arylsubstituted hydrocarbon radical having from 1 to 20 carbon atoms, or (iii) an aromatic or alkylsubstituted aromatic radical having from 1 to 20 carbon atoms,

(d) m is a function of the nature of X and is equal to v−1, v being the valence of X and wherein m is greater than 1 the radicals R″ can be equal to, or different from, each other,

(e) +j equals z, z being an integer between 4 and 20 and in addition i can be equal to j or different from j.

4,239,693

PROCESS FOR PRODUCTION OF METHANOL

Robert A. McCallister, Mountain Lakes, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jun. 22, 1979, Ser. No. 51,325
Int. Cl.³ C07C *31/04, 29/16*
U.S. Cl. 260—449.5 **4 Claims**

1. In a process for the production of methanol including reforming, energy recovery, compression and synthesis reaction stages, wherein a purged gas at an elevated pressure is removed from said synthesis reaction stage, the improvement comprising the steps of

(a) passing said purged gas through an expander, said expander being operatively connected to a compressor, so as to recover energy from said purged gasline pressure and to use said energy to drive said compressor,

(b) combusting said expanded purged gas with an oxygen-containing gas to obtain a heated exhaust gas, said heated exhaust gas including oxygen,

(c) expanding said heated exhaust gas to recover energy therefrom, and

(d) passing said expanded heated exhaust gas to said reformed stage, a portion of said heated exhaust gas containing oxygen being combusted with a fuel in said reforming stage to generate heat for use in said reforming stage.

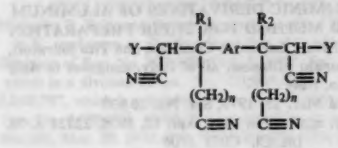
4,239,694

BIS-DICYANOALKYL ARENE COMPOUNDS

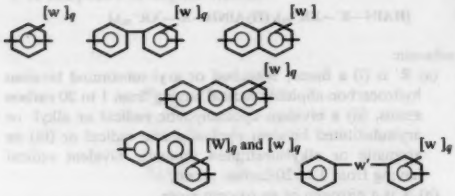
Edmund P. Woo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 26, 1979, Ser. No. 107,473
Int. Cl.³ C07C *121/66, 121/75*
U.S. Cl. 260—465 D **10 Claims**

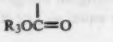
1. A bis-dicyanoalkyl arene compound of the formula



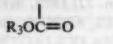
wherein Ar is a C_{6-20} arylene radical selected from the group consisting of:



wherein w in each occurrence is halo, nitro, or a C_{1-10} radical selected from alkyl, aryl, alkaryl, aralkyl, haloalkyl, haloaryl, aryloxy and alkoxy; q is an integer from zero to 4; and w' is oxygen, sulfur, alkylene, oxyalkylene, alkylenedioxy, or polyoxyalkylene; R_1, R_2 individually are hydrogen or alkyl, aryl, aralkyl, or alkaryl radicals containing up to 10 carbon atoms; Y is hydrogen or



where R_3 is an alkyl radical containing 1 to 10 carbon atoms; and both n's are zeros or ones, provided that when both n's are zeros, Y is



and when both n's are ones, Y is hydrogen.

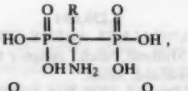
4,239,695

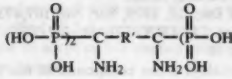
METHOD OF PREPARING PHOSPHONATES FROM NITRILES

Bong J. Chai, West Covina, and Fred D. Muggee, Anaheim, both of Calif., assignors to Magna Corporation, Santa Fe Springs, Calif.

Filed Mar. 24, 1977, Ser. No. 780,883
Int. Cl.[3] C07F *9/38*; C07C *121/16*; C07D *213/53*
U.S. Cl. 260—502.5 **11 Claims**

1. The process for producing aminophosphonic acids having the following formulae,





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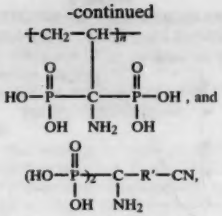
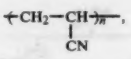


wherein R is a saturated or unsaturated aliphatic radical having 1–22 carbon atoms or phenyl or benzyl or naphthyl radical or substituted aliphatic or aromatic radicals, R' is a difunctional aliphatic bridging radical having 1–10 carbon atoms, and n is ≧2, comprising reacting at a temperature of from about 100° C. to about 200° C. a mixture consisting essentially of phosphorous acid and an organonitrile selected from the group consisting essentially of R—CN, NC—R'—CN and



R being a saturated or unsaturated aliphatic radical, or phenyl, benzyl or naphthyl or substituted aliphatic or aromatic radical, R' being an aliphatic bridging radical, and n being a positive integer of 2 or greater.

4,239,696

PROCESS FOR THE PRODUCTION OF ALKYL SULFONIC ACIDS

Gerd Schreyer, Wildaustrasse 22; Friedhelm Geiger, Theodor-Heuss-Strasse 11, and Jörg Hensel, Grünaustrasse 3, all of 6450 Hanau 9, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 654,063, Feb. 2, 1976, abandoned. This application Feb. 4, 1976, Ser. No. 655,017
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1975, 2504235
Int. Cl.[3] C07C *143/02*
U.S. Cl. 260—513 R **13 Claims**

1. A process for the production of an alkylsulfonic acid comprising oxidizing an alkyl mercaptan or a dialkyl disulfide with hydrogen peroxide in a liquid alkylsulfonic acid reaction medium free of percarboxylic acids and carboxylic acids, there being employed 1 to 35% of alkylsulfonic acid based on the amount of alkyl mercaptan or dialkyl disulfide.

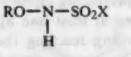
4,239,697

O-SUBSTITUTED N-HYDROXYSULFAMID ACID HALIDES AND THEIR PREPARATION

Adolf Parg, Bad Durkheim, and Gerhard Hamprecht, Weinheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 38,172, May 11, 1979. This application Oct. 1, 1979, Ser. No. 80,506
Int. Cl.[3] C07C *143/14, 143/21*
U.S. Cl. 260—543 R **6 Claims**

1. A O-substituted N-hydroxysulfamic acid halide of the formula



where R is alkyl of 1 to 20 carbons, alkyi of 2 to 20 carbons substituted by 1 to 3 alkoxy groups of 1 to 7 carbons, cycloalkyl of 4 to 8 carbon atoms or said groups further substituted by chlorine, bromine, alkyl or alkoxy each of 1 to 4 carbon atoms,

carbalkoxy of 2 to 4 carbon atoms or cycloalkyl of 4 to 6 carbon atoms and X is halogen.

4,239,698

PROCESS FOR PREPARING CARBOXYLIC ACID ANHYDRIDES

Tomiya Isshiki, Tokyo; Yasuhiko Kijima, Matsodo, and Yuh Miyauchi, Mastsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 949,853
Claims priority, application Japan, Oct. 11, 1977, 52-121772
Int. Cl.³ C07C *51/54, 51/56*
U.S. Cl. 260—549 **5 Claims**

1. In a process for preparing a carboxylic acid anhydride by reacting an aliphatic carboxylic acid ester or an ether with carbon monoxide in the presence of a nickel component, an iodine component and a trivalent nitrogen-group element component in an aliphatic carboxylic acid solvent, the improvement which comprises using a catalyst system consisting essentially of (1) elemental nickel or a nickel compound, (2) iodine or an iodine compound and (3) an organic compound of a trivalent nitrogen-group element, wherein said iodine or iodine compound is selected from the following formulae (I) to (IV),

$$RX_n \quad \text{(I)}$$

wherein R represents hydrogen, alkyl or alkylene, X represents an iodine or bromine atom, n represents an integer of 1 to 3, and at least one of n X's is an iodine atom,

$$I_2 \text{ or } I_3^- \quad \text{(II)}$$

$$RCOI \quad \text{(III)}$$

wherein R represents alkyl, and

$$MI_2 \quad \text{(IV)}$$

wherein M represents an alkaline earth metal, and is used in an amount such that the free iodine or iodine compound not chemically combined with said nickel or nickel compound or with said organic compound of a trivalent nitrogen-group element is present in an amount of at least 0.2 mole, as elemental iodine, per mole of each of said organic compound of a trivalent nitrogen-group element and said nickel or nickel compound.

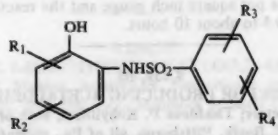
4,239,699

SULFONAMIDOPHENOLS, METAL COMPLEXES THEREOF, AND SOLUTIONS CONTAINING SUCH COMPOUNDS FOR USE IN EXTRACTION OF METAL VALUES

Kenneth D. MacKay, Circle Pines, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

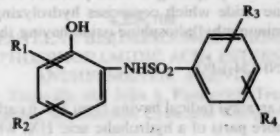
Filed May 24, 1978, Ser. No. 909,224
Int. Cl.³ C07C *143/78, 143/79*; B01D *11/04*
U.S. Cl. 564—92 **32 Claims**

1. Compounds of the structure:



wherein R_1 and R_2, which may be the same or different, are selected from the group consisting of hydrogen, linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms, halogen, nitro, cyano, trifluoromethyl and methylsulfonyl, with the proviso that both R_1 and R_2 are not alkyl, and R_3 and R_4, which may be the same or different, are selected from the group consisting of hydrogen and linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms, said compounds being further characterized as having solubilities of at least 2% by weight in essentially water-immiscible liquid hydrocarbon solvents.

17. A composition of matter consisting essentially of a solution of sulfonamidophenol in an essentially water-immiscible liquid hydrocarbon solvent, said solution containing at least 2% by weight of said sulonamidophenol, said sulfonamidophenol being selected from compounds of structure:



wherein R_1 and R_2, which may be the same or different, are selected from the group consisting of hydrogen, linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms, halogen, nitro, cyano, trifluoromethyl, and methylsulfonyl, with the proviso that both R_1 and R_2 are not alkyl and R_3 and R_4, which may be the same or different, are selected from the group consisting of hydrogen and linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms.

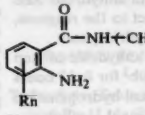
4,239,700

ISATOIC ANHYDRIDE DERIVATIVES AND USE AS CHAIN-EXTENDERS

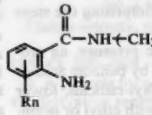
Edward T. Marquis, and Ernest L. Yeakey, both of Austin, Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 949,833, Oct. 10, 1978, Pat. No. 4,194,070.
This application May 22, 1979, Ser. No. 41,360
Int. Cl.³ C07C *103/22*
U.S. Cl. 564—157 **5 Claims**

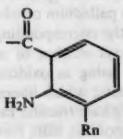
1. A compound of the formula:



or



where R is selected from the group consisting of hydrogen, alkyl, nitro, halo, hydroxy, amino and cyano, n is a number of 1–4, x is a number of from 2 to 6 and R_1 is hydrogen or



4,239,701

TERNARY SALTS OF TRIS(AMINOMETHYL)PHOSPHINES AND THEIR OXIDES

Arlen W. Frank, Slidell; Donald J. Daigle, New Orleans, and Russell M. H. Kullman, Harahan, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 964,854, Nov. 29, 1978, Pat. No. 4,196,149. This application Jul. 26, 1979, Ser. No. 61,322

Int. Cl.[3] C07C *85/20*

U.S. Cl. 564—15 3 Claims

1. A process for preparing a ternary salt of tris(aminomethyl)phosphine oxide which comprises hydrolyzing a tris(N-carbalkoxyaminomethyl)phosphine oxide having the formula:

$$(R'O_2CNHCH_2)_3PO$$

wherein R' is an alkyl radical having from 1 to 6 carbon atoms, with six or more parts of a hydrohalic acid HX, where X is a halogen, until all three of the acyl-nitrogen bonds are cleaved, and recovering the product therefrom.

4,239,702

PROCESS FOR PREPARING AROMATIC ALDEHYDES AND ALCOHOLS

Paolo deWitt, and Maria O. Tinti, both of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Italy

Filed Jan. 18, 1979, Ser. No. 4,447

Claims priority, application Italy, Jan. 27, 1978, 47811 A/78; Jan. 4, 1979, 47537 A/79

Int. Cl.[3] C07C *45/29, 29/136*

U.S. Cl. 568—435 5 Claims

1. Process for producing a benzyl alcohol comprising the steps of:

(1) reacting at 5°–10° C., at atmospheric pressure, an aromatic acid chosen in the group formed by benzoic acid or benzoic acid substituted with lower-alkyl radicals, lower alkoxy groups, chlorine and bromine, with ethyl or isobutyl chloroformiate, in the presence of an anhydrous base or an anhydrous solvent, inert in respect to the reagents, obtaining the corresponding mixed anhydride; and

(2) hydrogenizing by catalysis the mixed anhydride of step (1) at 55°–65° C., at 150–250 pounds/inch^2 for 8–12 hours in the presence of a palladium on charcoal hydrogenation catalyst, obtaining the corresponding benzyl alcohol.

3. Process for producing benzaldehyde comprising the steps of:

(1) reacting at 5°–10° C., at atmospheric pressure, an aromatic acid chosen in the group formed by benzoic acid or benzoic acid substituted with lower alkyl-radicals, lower alkoxy-groups, chlorine and bromine, with ethyl or isobutyl chloroformiate, in the presence of an anhydrous base or an anhydrous solvent, inert in respect to the reagents, obtaining the corresponding mixed anhydride;

(2) hydrogenizing by catalysis the mixed anhydride of step (1) at 55°–65° C., at 150–250 pounds/inch^2 for 8–12 hours in the presence of a palladium on charcoal hydrogenation catalyst, obtaining the corresponding benzyl alcohol; and

(3) oxidizing the benzyl alcohol of step (2) to the corresponding aldehyde using as oxidizing agent an aqueous solution of a compound which liberates hypochlorite ions in the presence of a phase transfer catalyst, chosen among the quaternary ammonium salts formed by three hydrocarbonic chains C_8–C_{10} and by a methyl group.

4,239,703

PROCESS FOR THE PREPARATION OF TEREPHTHALIC, ISOPHTHALIC AND PHTHALIC DIALDEHYDES

Günther Bernhardt, St. Augustin, and Gerhard Daum, Cologne, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,826

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834051

Int. Cl.[3] C07C *45/29*

U.S. Cl. 568—431 15 Claims

1. A process for the preparation of a terephthalic, isophthalic or phthalic dialdehyde which comprises heating a xylylene glycol in the vapor phase at a temperature between 250° and 500° C. in the presence of an oxygen-containing gas, water vapor, and in the presence of a silver dehydrogenation catalyst.

4,239,704

PROCESS FOR PRODUCING ACETALDEHYDE

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 957,130, Nov. 2, 1978, and Ser. No. 936,717, Aug. 25, 1978. This application May 25, 1979, Ser. No. 42,330

Int. Cl.[3] C07C *47/06*

U.S. Cl. 568—487 22 Claims

1. A process for selectively producing acetaldehyde which comprises introducing into a reaction zone (1) methanol, (2) hydrogen, (3) carbon monoxide, (4) a cobalt entity selected from the group consisting of a cobalt carbonyl, a hydrido cobalt carbonyl and a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, (5) a ligand selected from the group consisting of an arsenic and antimony base ligands defined by the following formula:

wherein X is a member selected from the group consisting of trivalent arsenic or trivalent antimony: and R_1, R_2 and R_3 are either alike or different members selected from the group consisting of alkyl, phenyl and alkyl substituted phenyl radicals, with the provision that at least one R group is phenyl or alkyl substituted phenyl, and (6) an iodine compound and then subjecting the contents of said reaction zone to an elevated temperature and an elevated pressure for a time sufficient to convert methanol to acetaldehyde, the cobalt entity and the ligand entity being present in a molar ratio of about 20:1 to about 1:10, the cobalt entity and the iodine entity being present in a molar ratio of about 100:1 to about 1:2, the weight percent of combined cobalt entity, ligand entity and iodine entity being about 0.01 to about 10, based on methanol, the carbon monoxide and hydrogen being present in a molar ratio of about 1:10 to about 10:1, the reaction temperature being about 150° to about 250° C., the reaction pressure being about 1000 to about 10,000 pounds per square inch gauge and the reaction period being about 0.5 to about 10 hours.

4,239,705

PROCESS FOR PRODUCING ACETALDEHYDE

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

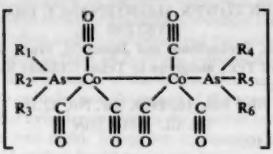
Continuation-in-part of Ser. No. 936,718, Aug. 25, 1978, abandoned. This application May 25, 1979, Ser. No. 42,427

Int. Cl.[3] C07C *47/06*

U.S. Cl. 568—487 12 Claims

1. A process for selectively producing acetaldehyde which

comprises introducing into a reaction zone (1) methanol, (2) hydrogen, (3) carbon monoxide, (4) an arsenic-cobalt tricarbonyl complex defined by the following formula:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are members selected from the group consisting of phenyl and alkyl substituted phenyl and (5) an iodine compound, the arsenic-cobalt tricarbonyl complex and the iodine entity being present in a molar ratio of about 100:1 to about 1:100, the weight percent of combined cobalt tricarbonyl complex and the iodine entity, as elements, being present in the range of about 0.01 to about 10 percent, the molar ratio of carbon monoxide to hydrogen being about 1:10 to about 10:1, and then subjecting the contents of said reaction zone to an elevated temperature of about 150° to about 250° C. and an elevated pressure of about 1000 to about 6000 pounds per square inch gauge for a time within the range of about 0.5 to about 10 hours sufficient to convert methanol to acetaldehyde.

4,239,706

PREPARATION OF CROTONALDEHYDES

Rolf Fischer, Heidelberg, and Hans-Martin Weitz, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

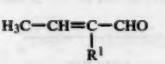
Filed Mar. 14, 1979, Ser. No. 20,458

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1978, 2815539

Int. Cl.³ C07C *47/21*

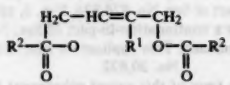
U.S. Cl. 568—484 **6 Claims**

1. A process for the preparation of a crotonaldehyde of the formula



I

where R_1 is hydrogen or alkyl of 1-7 carbon atoms, wherein a 1,4-diacyloxy-but-2ene of the formula



II

where R^1 has the above meansings and R^2 is hydrogen or alkyl of 1–7 carbon atoms, is reacted with water in the presence of a cation exchanger at a temperature of from 0° to 200° C.

4,239,707

NOVEL 8-SUBSTITUTED BICYCLO(3,2,)-OCTANES

Albertus J. Mulder, Amsterdam, Netherlands, and Pieter A. Verbrugge, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

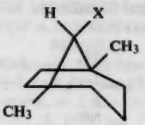
Filed Dec. 21, 1979, Ser. No. 106,227

Claims priority, application United Kingdom, Dec. 29, 1978, 50280/78

Int. Cl.³ C07C *17/08, 119/02*

U.S. Cl. 570—130 **8 Claims**

1. 1,5-Dimethylbicyclo[3,2,1]octanes of the formula I:



(I)

wherein X represents a halogen atom selected from the class consisting of fluorine, chlorine, bromine and iodine or a cyanide group.

4,239,708

P-PHENYLENE BIS[IMINO(THIOCARBONYL)] DIPHOSPHORAMIDIC ACID ESTERS AS ANTHELMENTIC AGENTS

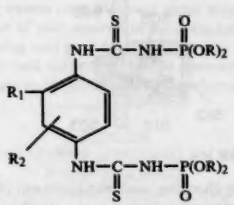
Goro Asato, Titusville, and John A. Pankavich, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 903,293, May 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 819,304, Jul. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 719,225, Aug. 31, 1976, abandoned. This application Mar. 1, 1979, Ser. No. 16,678

Int. Cl.³ C07F *9/24*; A01N *57/28*

U.S. Cl. 260—926 **17 Claims**

1. An anthelmintic diphosphoramidate compound of the structure:



wherein R is alkyl (C_1–C_4); R_1 represents a member selected from the group consisting of alkyl (C_1–C_4), chloro, bromo, iodo, R_3O, R_3S and CF_3; R_2 represents hydrogen methyl and chloro; R_3 represents a member selected from the group consisting of alkyl (C_1–C_4), benzyl and phenyl.

4,239,709

PROCESS FOR PREPARING OPTICALLY ACTIVE OXAZAPHOSPHORINS

Tadao Sato, Tokushima, Japan, assignor to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

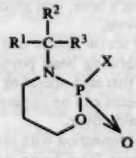
Filed May 29, 1979, Ser. No. 43,462

Claims priority, application Japan, May 29, 1978, 53-64681

Int. Cl.³ C07F *9/24*

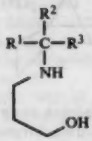
U.S. Cl. 260—974 **14 Claims**

1. A process for preparing an optically active oxazaphosphorin derivative represented by the general formula,



wherein R^1, R^2 and R^3 are respectively different from each other, and are each hydrogen atom, a lower alkyl group, an aralkyl group, or an aryl group; and X is a halogen atom,

which is prepared by reacting an optically active aminoalcohol represented by the general formula,



wherein R^1, R^2 and R^3 are the same as defined above with a phosphor compound represented by the general formula,

POX_3

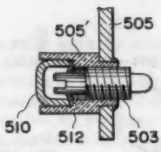
wherein X is a halogen atom.

4,239,710

DEVICE FOR CHECKING RANDOM ADJUSTMENT OF ADJUSTABLE PARTS OF CARBURETOR

Motoki Sato, Nagoya, Japan, assignor to Aisan Industry Co., Ltd., Aichi, Japan

Filed Feb. 21, 1979, Ser. No. 13,644
Claims priority, application Japan, Mar. 3, 1978, 53/24867
Int. Cl.³ F16K *35/10*
U.S. Cl. 261—65 **12 Claims**



2. A device for checking random adjustment of an adjustable part of a carburetor comprising a cover attached to the operating head portion of an adjusting screw such that said cover can never be removed without being deformed, whereby the exposure of said operating head for adjusting purpose cannot be made without breaking said cover, said device further comprising means provided in connection with said cover and adapted for preventing said screw from being naturally loosened, wherein

a stopper is mounted on said adjusting screw, said adjusting screw is screwed into a screw holder into which said cover is forced, such that said stopper is pressed by said cover so as to be pressingly retained by said screw.

7. A device for checking random adjustment of adjustable parts of a carburetor, comprising

an adjusting screw means for optimizing the mixing ratio of fuel and air to be introduced into an internal combustion engine and having an operating head portion,

means comprising an engagement portion at said head portion thereof adapted for operable engagement with an adjusting tool,

a screw holder having a bore, said adjusting screw means is inserted into said bore,

a cover fixed to said screw holder and enclosing the entire surface of said operating head portion of said adjusting screw means such that said operating head portion of said adjusting screw means can be put into an operable condition by breaking said cover,

prevention means in connection with said cover for preventing said screw means from being naturally loosened by itself,

said prevention means comprises a pin fixedly connected to said cover,

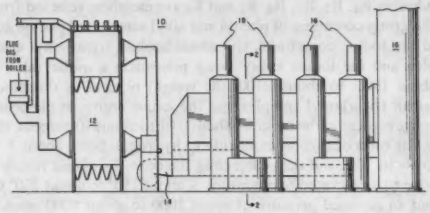
said cover closely fits into said screw holder with said pin driven into said adjusting screw means.

4,239,711

ABSORBER TOWER MAINTENANCE ISOLATION SYSTEM

David C. Dick, Richardson, and James M. Hurt, Jr., Duncanville, both of Tex., assignors to Texas Utilities Services, Inc., Dallas, Tex.

Filed Feb. 16, 1979, Ser. No. 13,188
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—109 **20 Claims**



1. An absorber tower maintenance isolation system for a flue gas desulphurization system used in a steam electric generating plant having a steam generator, a flue gas duct for conveying flue gas from the steam generator, at least one absorber tower connected to the flue gas duct by inlet and outlet ducts for receiving, desulphurizing, and returning the flue gas to the flue gas duct, dampers within the inlet and outlet ducts for regulating the flow of the flue gas, and a chimney for receiving the desulphurized flue gas and discharging it to the atmosphere comprising:

an inlet blank-off plate attached to the entrance to each absorber tower inlet duct from the flue gas duct;

an outlet blank-off plate attached to the exit from each absorber tower outlet duct to the flue gas duct; and,

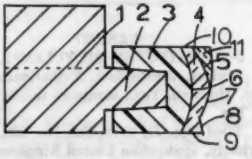
means for opening and closing the inlet and outlet blankoff plates to isolate the absorber tower for maintenance purposes without interruption of the steam generator operation.

4,239,712

METHOD OF MAKING BIFOCAL CONTACT LENSES

Charles W. Neefe, Big Spring, Tex., assignor to Neefe Optical Laboratory, Big Spring, Tex.

Continuation-in-part of Ser. No. 972,526, Dec. 22, 1978, which is a continuation-in-part of Ser. No. 874,934, Feb. 3, 1978, Pat. No. 4,150,073, which is a continuation-in-part of Ser. No. 793,388, May 25, 1977, abandoned. This application Mar. 15, 1979, Ser. No. 20,822
The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1 **7 Claims**



1. A method of making a bifocal lens comprising the steps of: Providing a positive lens mold having a first surface curvature

corresponding to the curve required on one surface of the finished lens, and a second surface corresponding to the edge surface of the finished lens with the second surface extending from the first surface curvature a distance greater than the height of the thickness of the lens, forming a negative mold from the positive mold by applying a softened resinous material against the first surface curvature and the second surface of the positive mold to form an open top cylinder from the resinous material with an image of the first surface curvature as the bottom of the cylinder and the image of the second surface as the walls of the cylinder, removing the positive lens mold from the negative lens mold, filling the resinous cylinder of the negative mold with a liquid monomer lens material allowing the liquid monomer lens material to polymerize to form a solid monolithic mass within the resinous cylinder of the negative mold having one finished optical surface molded by the negative image of the first surface curvature formed in the bottom of the resinous cylinder, providing an eccentric rotation while cutting and polishing a second optical surface on the polymerized lens material, to produce a prism lens having a thin apex and thicker base, while the lens material is supported within the resinous cylinder, covering the polished surface of the prism lens with a protective layer of polymer material placing the lens a second time upon the eccentric with the thin apex positioned at the same location that the thicker base was positioned the first time, and the second position of the thick base being the same as the first position of the thin apex, cutting a third optical surface having a selected radius shorter than the second radius, polishing the third radius, removing the lens from the resinous cylinder of the negative mold and removing the protective polymer layer.

4,239,713

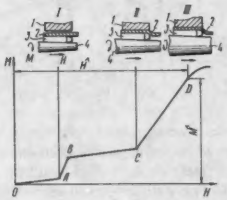
METHOD AND MACHINE FOR EXPANDING TUBES IN A TUBE WALL

Viktor M. Brif, and Leonid M. Brif, both of ulitsa Dvinskaya, 14, kv. 14., Volograd, U.S.S.R.

Filed Jun. 22, 1978, Ser. No. 918,825

Int. Cl.³ B21D *39/06*; B29C *27/12*

U.S. Cl. 264—40.1 **6 Claims**



1. A method of expanding tubes in a tube wall, comprising the steps of: acting upon the tube with a roller-type rolling tool to expand the tube, measuring simultaneously a variable effort and a linear displacement variable, as caused by said acting, which variables define the magnitudes of stresses and deformations occurring during expanding, said measuring being conducted successively at three operationwise stages, viz. the stage of elastic deformation of the tube, the stage of plastic deformation of the tube until the moment of the engagement of the external surface thereof with the surface of the opening in the tube wall, and the stage of elastic deformation of the tube wall, and optimizing the control over the expanding operation by the variable effort and the linear displacement variable to obtain maximum strength and fluid-tightness of the assembly of the tube in the tube wall, in accordance with the geometric dimensions and the mechanical properties of the respective materials of the tube and of the tube wall.

4,239,714

METHOD FOR MODIFYING THE PORE SIZE DISTRIBUTION OF A MICROPOROUS SEPARATION MEDIUM

Robert E. Sparks, Kirkwood, Mo.; Mariam M. Wahab, Columbus, Ohio, and Norbert S. Mason, Clayton, Mo., assignors to Washington University, St. Louis, Mo.

Filed Nov. 15, 1978, Ser. No. 960,745

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—45.5 **8 Claims**

1. A method of modifying the pore size distribution of a microporous separation medium so as to provide it with a sharp upper cut-off of preselected molecular size, comprising the steps of:

(a) filling the pores of said separation medium with a volatile liquid;

(b) evaporating a controlled amount of said volatile liquid from said separation medium so as to lower the level of said liquid within said pores to below the bulk surface of said separation medium and thereby form voids at the entrances to said pores;

(c) applying to said bulk surface of said separation medium a concentrated solution of a pore-blocking agent, said pore-blocking agent being a material which is insoluble in said volatile liquid and capable of being insolubilized in said solution and whose molecular size distribution has a lower limit corresponding to said preselected molecular size, whereby said pore-blocking agent selectively enters only those pores larger than said preselected size and remains in said voids at the entrances to said pores;

(d) removing excess pore-blocking agent solution from said bulk surface of said separation medium; and

(e) insolubilizing said pore-blocking agent so as to immobilize it within said voids and thereby obstruct the entrances to all said pores larger than said preselected size.

4,239,715

METHOD FOR MANUFACTURING AN ELONGATED STRIP BEARING

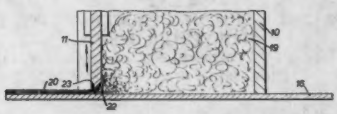
George C. Pratt, Chorleywood, England, assignor to The Glacier Metal Company Limited, Middlesex, England

Continuation of Ser. No. 707,211, Jul. 21, 1976, abandoned, which is a continuation of Ser. No. 605,207, Aug. 15, 1975, abandoned, which is a continuation of Ser. No. 217,302, Jan. 12, 1972, abandoned. This application Oct. 31, 1977, Ser. No. 847,046

Claims priority, application United Kingdom, Jan. 13, 1971, 1611/71

Int. Cl.² B28B *1/08*; B05D *3/02*

U.S. Cl. 264—70 **4 Claims**



1. A method of making a multi-layered elongated strip bearing, one layer of said bearing being defined by a solid backing strip and another layer thereof being defined by a layer of particulate powder bearing material bonded to said backing strip, said method comprising the steps of:

A. providing a container having vertical side walls and an open bottom, one of said side walls defining a vertically reciprocating downstream wall of said container, said downstream wall having a bottom edge which is beveled upwardly toward the inside of said container,

B. maintaining a supply of said powder within said container in direct contact with a vertical inside wall of said downstream wall to a height disposed above an upper end of a vertical reciprocation stroke of said downstream wall,

C. feeding a solid backing strip beneath said container so that some of said powder is deposited onto said backing strip,

D. advancing said powder-carrying backing strip toward said downstream wall and beneath said bottom edge,

E. vertically reciprocating said downstream wall as said strip passes therebeneath such that:

i. at the top of said reciprocation stroke said bottom edge is out of contact with powder on said strip and exposes for uninhibited downstream travel a height of uncompacted powder on said backing strip extending from said strip to said bottom edge so that such uncompacted powder moves downstream to a position beneath said bottom edge, and

ii. at the bottom of said reciprocation stroke said bottom edge is disposed at a predetermined location above said backing strip and compacts powder disposed therebeneath, and

F. thereafter heating the compacted powder material and backing strip to bond together particles of said powder and bond such particles to said backing strip.

4,239,716

GYPSUM MOLDINGS AS BUILDING MATERIALS AND METHODS MANUFACTURING THE SAID GYPSUM MOLDINGS

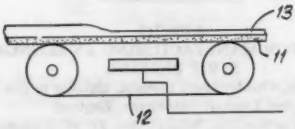
Nobumasa Ishida; Yasuo Yamada, both of Nagoya, and Hideki Jinno, Aichi, all of Japan, assignors to Nippon Hardboard Co. Ltd., Nagoya, Japan

Filed May 26, 1978, Ser. No. 909,938

Claims priority, application Japan, May 30, 1977, 52-63756; Aug. 13, 1977, 52-97119; Aug. 19, 1977, 52-99982; Oct. 20, 1977, 52-125954; Oct. 20, 1977, 52-125955

Int. Cl.³ B28B *1/26*

U.S. Cl. 264—86 **6 Claims**



1. A method of manufacturing gypsum moldings useful as building materials which comprises molding an admixture of fibrous α-calcium sulfate hemihydrate with reinforcing agents in the presence of water, heat curing the resulting moldings and drying the resulting heat-cured moldings.

4,239,717

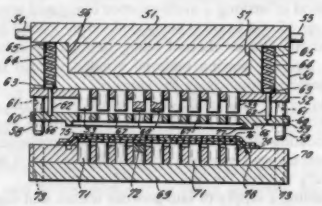
COMPRESSION MOLDING PROCEDURE FOR LIQUID POLYESTER RESINS

Paul Wintner, 1420 Freeport Loop, Brooklyn, N.Y. 11239

Filed May 2, 1979, Ser. No. 35,257

Int. Cl.³ B29G *1/00*

U.S. Cl. 264—108 **14 Claims**



1. A process for heat and pressure molding of a thermosetting resinous composition, wherein the mold comprises upper and lower mold parts which are relatively movable between an open condition, a partially closed condition and a fully closed condition, wherein at least one of the mold parts includes mold cavities into which the resinous compositions may be compressed, the process comprising the steps of:

applying a heat-hardenable, substantially liquid, polymerizable, resinous composition between the mold parts while they are in the open condition;

moving the mold parts to a semi-closed condition so that the upper mold part is contacting the resinous composition, without applying molding pressure thereto;

holding the mold parts at the semi-closed condition for a period of time sufficient to apply heat to and to heat the resinous composition by applying heat at at least one of the mold parts; applying heat to at least one mold part at an elevated temperature so that the heat is applied to the resinous composition for the period of time;

thereafter moving the mold parts to the closed condition, at which elevated pressure is applied to the resinous composition for forcing the resinous composition into the mold cavities, while maintaining the mold parts at elevated temperatures.

4,239,718

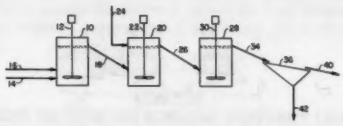
PROCESS FOR AGGLOMERATING FINELY DIVIDED CARBONACEOUS SOLIDS

Philip J. Dudt, Scenery Hill, Pa., assignor to Continental Oil Company, Stamford, Conn.

Filed Apr. 18, 1979, Ser. No. 31,250

Int. Cl.³ B01J *2/06*

U.S. Cl. 264—117 **5 Claims**



1. In a process for agglomerating finely divided carbonaceous solids in an aqueous slurry containing about 10 to 40 weight percent finely divided solids, said finely divided solids comprising said finely divided carbonaceous solids and finely divided inroganic solids said process comprising:

(a) mixing said slurry with an amount of oil to produce agglomerates of said carbonaceous solids containing from about 12 to 15 weight percent oil; and,

(b) recovering said agglomerates as a product,

an improvement comprising:

(c) admixing said oil in an amount of about 40 to 70 weight percent based on the weight of said finely divided solids with said slurry to produce a mixture of said oil and said slurry; and

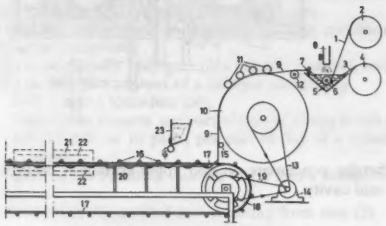
(d) admixing clean finely divided carbonaceous solids with said mixture at a mixing rate of about 0.3 to 1.25 hp/ft³ to invert said mixture and produce agglomerates of said carbonaceous solids and oil, said agglomerates containing from about 12 to 15 weight percent oil,

whereby a slurry containing said finely divided carbonaceous solids which do not agglomerate upon mixing with from about 10 to 30 weight percent oil based on the weight of said carbonaceous solids can be agglomerated.

4,239,719
METHOD FOR CONTINUOUS PRODUCTION OF CORRUGATED SHEETS

Ashjorn Ronning, Sandefjord, Norway, assignor to Steni A/S, Sandefjord, Norway

Continuation of Ser. No. 592,933, Jul. 3, 1975, abandoned. This application Jul. 25, 1977, Ser. No. 818,851
Claims priority, application Norway, Jul. 11, 1974, 742529
Int. Cl.[3] B29D *3/02;* B29G *5/00*
U.S. Cl. 264—137 5 Claims



1. A method of continuous production of rigid transversely corrugated sheets comprising a material impregnated with a thermosetting binding agent, said method comprising:

impregnating a flexible sheet of material with a thermosetting binding agent;

moving an elongated substantially horizontally disposed endless carrier, having a plurality of substantially equally spaced apart transversely extending rod-like elements with no sheet-supporting structure between them, at a given adjustable linear speed;

forming corrugations, which are freely downwardly hanging only under their own weight, of desired shape in the flexible sheet between the rod-like elements in the open spaces therebetween by feeding the impregnated flexible sheet onto the moving elongated carrier at an adjustable linear speed which is greater than said given speed and by simultaneously only supporting the flexible sheet only on the rod-like elements of the moving carrier in an essentially horizontal disposition at longitudinally substantially constantly spaced intervals;

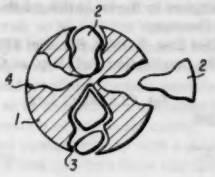
heating the still flexible corrugated sheet to cure the binding agent and rigidify the sheet while the sheet is advanced through a curing zone by said rod-like elements with the corrugations hanging freely downwardly between the rod-like elements, and removing said sheet from said carrier in rigid corrugated form.

4,239,720
FIBER STRUCTURES OF SPLIT MULTICOMPONENT FIBERS AND PROCESS THEREFOR

Klaus Gerlach, Obernau; Nikolaus Mathes, Breuberg, and Friedbert Wechs, Worth am Main, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 1, 1979, Ser. No. 16,560
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 7806419[U]; Mar. 3, 1978, 7806496[U]; Mar. 3, 1978, 7806500[U]; Mar. 3, 1978, 7806518[U]; Mar. 3, 1978, 7806531[U]; Mar. 3, 1978, 7806532[U]; Mar. 3, 1978, 7806543[U]; Mar. 3, 1978, 2809346; Dec. 23, 1978, 2856091; Jan. 25, 1979, 2902758
Int. Cl.[2] D02G *3/00*
U.S. Cl. 264—147 30 Claims

1. A process for making fiber structures by splitting multicomponent fibers by treatment with an organic solvent, comprising treating shrinkable, essentially nonset multicomponent fibers comprising at least two incompatible components, which are arranged over the cross section of the fiber so as to form as to form a matrix and a plurality of segments, said segments comprising from about 20% to about 80% of the total cross section and at least three segments being arranged peripherally without being completely embedded in the matrix component, with a liquid or gaseous organic solvent which will lower the zero shrinkage temperature of one of the matrix polymer or the

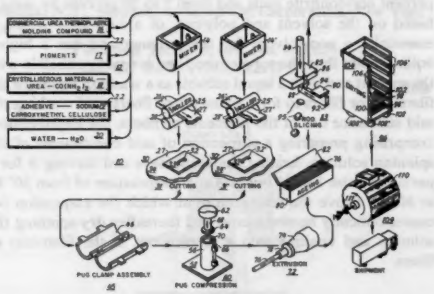


segment polymer by at least 160° C., and in which the polymer components of the fiber exhibit a differential shrinkage, said treatment being carried out at a temperature and for a time sufficient to entirely or partly split said multicomponent fibers into separate segments.

4,239,721
PROCESS FOR THE MANUFACTURE OF PATTERNED UREA THERMOPLASTIC MOLDING COMPOUND PREFORMS TO BE USED FOR THE PRODUCTION OF CONSISTENTLY PATTERNED BUTTONS WITH MOLDED HOLES

Leonard R. Nitzberg, 1413 Buckeye La., Knoxville, Tenn. 37919

Filed Jan. 12, 1979, Ser. No. 3,000
Int. Cl.[3] B29C *17/00, 25/00;* B29G *2/00*
U.S. Cl. 264—157 15 Claims



1. A method of producing consistently patterned and pigmented preforms of urea thermosetting plastic molding compound, which preforms may be molded into buttons and the like comprising the steps of:

mixing selected amounts of the dry constituents which include urea thermosetting plastic molding compound, color pigments, crystalline urea and hydrophillic adhesives;

adding and mixing a selected amount of water with said dry constituents to obtain a preform material;

compressing said preform material;

extruding said compressed preform material to obtain rods of said preform material having a desired size and cross section;

aging said extruded preform material;

dividing said rod of preform material into preforms or blanks having a selected thickness; and

adjusting the amount of water in said preforms such that said preforms are suitable for molding into buttons and the like having a desired configuration.

4,239,722

PROCESS FOR THE PRODUCTION OF HYDROPHILIC FIBRES

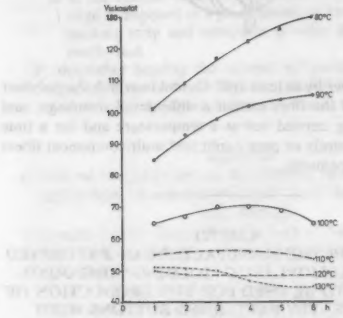
Ulrich Reinehr, Dormagen; Herman-Josef Jungverdorben, Grevenbroich; Toni Herbertz, Dormagen; Joachim Dross, Dormagen, and Rolf-Burkhard Hirsch, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 9, 1977, Ser. No. 859,216

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2657144

Int. Cl.[3] D02G 3/00

U.S. Cl. 264—206 11 Claims



1. In the process of producing hydrophilic filaments or fibers by dry spinning a solution comprising a solvent consisting essentially of dimethyl formamide, 19 to 40 by weight of a filament forming synthetic polymer containing at least 50 percent acrylonitrile units and from 5 to 50 percent by weight based on the solvent and polymer, of a substance which is essentially a non-solvent for the polymer and has a higher boiling point than the solvent used and is readily miscible with the solvent and with a liquid suitable as a washing liquid for the filaments or fibers to form filaments or fibers, and washing the said substance out of the filaments or fibers; the improvement comprising preparing a suspension of said constituents of the spinning solution, heating the suspension and leaving it for a period of from 1 to 15 minutes at a temperature of from 30° C. to 60° C. above the temperature at which the suspension becomes optically homogeneous and thereafter dry-spinning the solution and washing said substance out of the filaments or fibers.

4,239,723

TIRE MOLD PRESS OPERATING METHOD

Walter G. Williams, Danville, Va., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 955,074, Oct. 26, 1978, Pat. No. 4,184,823. This application Aug. 9, 1979, Ser. No. 65,026

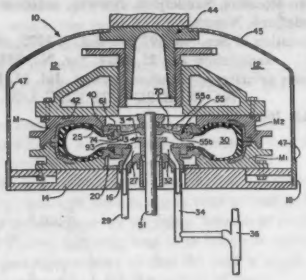
Int. Cl.[2] B29H 5/02

U.S. Cl. 264—315 4 Claims

1. A method of draining condensate from the upper surface of the top center plate of a steam dome-type tire curing press wherein condensate tends to accumulate in a pool on the upper surface of said top plate which surface is exposed to steam in the steam dome, said method comprising providing a flow passage through said top plate from its upper surface exposed to steam and condensate to its lower surface exposed to fluid pressures exerted within the tire cavity;

maintaining said passage closed to fluid flow while pressure in said cavity exceeds the pressure in said steam dome;

and causing said passage to open to flow of condensate therethrough from said upper to said lower surface only when pressure acting on said lower surface is less than the pressure acting on said upper surface;



whereby condensate on said upper surface is drained into said cavity.

4,239,724

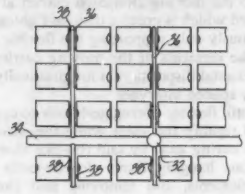
METHOD FOR MAKING VALUED PLASTIC ARTICLES SUCH AS GAME TILES

Robert Adell, Bloomfield Hills, Mich., assignor to U.S. Product Development Co., Novi, Mich.

Filed Sep. 5, 1978, Ser. No. 939,679

Int. Cl.[2] B29F 1/14, 1/06

U.S. Cl. 264—328.8 1 Claim



1. In the method of making valued, two-faced plastic articles, such as game tiles and the like, wherein each article is first made by molding and then value-designating indicia is applied to a face thereof and wherein the molding of each article is conducted in a mold cavity defined by a pair of separable members with one member forming one face of the article and the other member forming the other face, and upon separation of the mold members, the molded article is forcibly ejected by ejector means in said one mold member which imparts an indentation pattern to said one face and which also causes the article to be severed from residual plastic, the improvement for yielding an article which, after having been ejected, allows its value-designating indicia to be applied to either of its two faces without regard to which faces of other molded articles value-designating indicia are applied so that the non-indicia-containing faces of the article and other molded articles appear essentially identical, said improvement comprising providing a fixed protuberance pattern in the other mold member which, during molding of the article, creates an indentation pattern in the other face of the article essentially identical to the indentation pattern imparted to the one face of the article by said ejector means.

4,239,725

LOW TEMPERATURE CURABLE ORGANIC RESIN COMPOSITIONS

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 58,318, Jul. 17, 1979, and a continuation-in-part of Ser. No. 962,997, Nov. 22, 1978, which is a continuation-in-part of Ser. No. 861,127, Dec. 16, 1977, abandoned. This application Feb. 19, 1980, Ser. No. 122,280

Int. Cl.[3] C08F 4/44

U.S. Cl. 264—328.6 8 Claims

1. A method for molding a shaped part from a cationically polymerizable organic material which comprises

(1) blending under reaction injection molding conditions a mixture comprising

(E) a cationically polymerizable organic material, and

(F) an effective amount of a catalyst comprising

(vii) a diaryl iodonium salt,

(viii) 0.1 to 10 parts, per part of (vii) of a copper salt and

(ix) 0.5 part to 10 parts, per part of (iv) of a reducing agent,

(2) injecting the resulting mixture of (1) into a heated mold and

(3) recovering the molded part resulting from step (2).

4,239,726

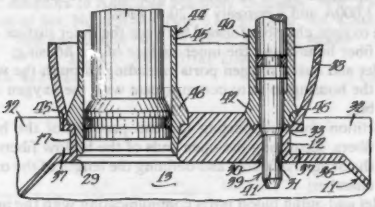
METHOD FOR FORMING, FILLING AND SEALING A CONTAINER HAVING PLURAL CLOSURES

Gerhard H. Weiler, South Barrington, and Henry Komendowski, Des Plaines, both of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Apr. 17, 1978, Ser. No. 896,978

Int. Cl.[3] B29C 17/07

U.S. Cl. 264—525 3 Claims



1. A method for forming, filling and sealing a container made from a thermoplastic material which comprises the steps of

providing an open assembly of mold parts defining a container-forming cavity and provided with means for constricting a parison;

extruding between said mold parts a parison of said thermoplastic material in the form of a semi-solid, elongated hollow tube;

closing said assembly of mold parts about said parison so as to confine a portion thereof between said mold parts and within said container-forming cavity while pinching closed one end of the confined parison portion and deforming the other end of said confined parison portion to provide a constriction defining a pair of access apertures into the confined parison portion;

severing a predetermined length of the extruded parison so as to provide an open-ended parison portion above the confined parison portion and unitary therewith;

temporarily sealing one of said access apertures by applying to the deformed parison portion defining said one access aperture a first mandrel equipped with an elongated, extensible compression molding member and with an annular molding surface coacting with said mold parts so as to form a weakened flange about said one access aperture;

extending said compression molding member into said one access aperture so as to form a container neck portion having a bore of predetermined configuration and communicating with said one access aperture;

temporarily sealing the other of said access apertures by applying to the deformed parison portion defining said other access aperture a second mandrel equipped with a blowing tube and a filling tube and terminating in a ring-like molding ram so as to form a second container neck portion having a bore of predetermined configuration and communicating with said other access aperture;

blow-forming said confined parison portion through said blowing tube so as to produce a container body conforming to configuration of said mold cavity;

filling the formed container body with a desired contents;

removing both of said mandrels from said deformed parison portions;

positioning closure-forming mold parts about said open-ended parison portion; and

operating said closure-forming mold parts so as to form individual closures for both of said access apertures unitary with said container body.

4,239,727

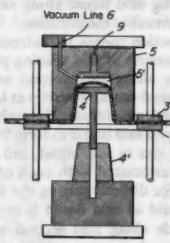
METHOD AND APPARATUS FOR THERMOFORMING THERMOPLASTIC FOAM ARTICLES

Donald W. Myers, and Samantha L. Vivlamore, both of Canandaigua, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 15, 1978, Ser. No. 942,836

Int. Cl.[3] B29C 17/03; B29D 27/00

U.S. Cl. 264—550 5 Claims



1. A method of thermoforming thermoplastic foam articles comprising, in sequence, the steps of:

a. preheating a sheet of thermoplastic foam stock material;

b. clamping said preheated stock material in a fixed position between matched male and female mold members;

c. initially partially deforming said preheated stock material toward a forming cavity of said female mold by extending a plug member from said male mold member;

d. maintaining said stock material in a partially deformed condition with said plug extended for an interval of from about 0.1 to about 2.0 seconds without substantial cooling of said stock material;

e. completely forming said article by drawing said partially formed preheated sheet into a forming cavity by vacuum and closing the matched male mold member to chill the stock material and set a final shape therein.

4,239,728

APPARATUS AND METHOD FOR THE DIFFUSION OF SUBSTANCES BETWEEN TWO FLUIDS SEPARATED BY A SEMIPERMEABLE MEMBRANE

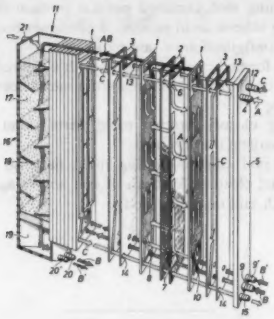
Kaj O. Stenberg, Staffanstorp, and Lars J. C. Traven, Lund, both of Sweden, assignors to Gambro AB, Sweden

Filed Jan. 24, 1979, Ser. No. 6,248

Claims priority, application Sweden, Feb. 2, 1978, 7801231

Int. Cl.³ A61M *1/03*

U.S. Cl. 422—46 **21 Claims**



1. A diffusion apparatus for the diffusion of a gas into a liquid comprising:

a pair of semi-permeable membranes each having first and second opposing surfaces and arranged with said first surfaces facing one another and said second surfaces facing away from one another, said semi-permeable membranes each being permeable to at least a portion of said gas;

first introduction means for introducing said gas between said pair of semi-permeable membranes to be conducted along said first surfaces thereof;

a pair of spacing plates arranged in juxtaposition to said second surfaces of said pair of semi-permeable membranes, said spacing plates including flow channels therein for conducting said liquid along said second surfaces of said semi-permeable membranes;

second introduction means for introducing said liquid into said flow channels of said spacing plates to be conducted therethrough along said second surfaces of said semi-permeable membranes, whereby at least a first part of said portion of said gas diffuses through said semi-permeable membranes into said liquid to form bubbles of said diffused gas of a first size in said liquid; and

mixing means associated with each of said semi-permeable membranes for directly mixing the second part of said gas into said liquid as said liquid is conducted through said flow channels along said second surfaces of said semi-permeable membranes so as to form bubbles of a second size larger than said first size in said liquid.

4,239,729

OXYGENATOR

Hiroshi Hasegawa, Chofu, and Hiromichi Fukasawa, Fuchu, both of Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,518

Claims priority, application Japan, Jun. 6, 1978, 53-68064; Mar. 28, 1979, 54-40380[U]

Int. Cl.³ A61M *1/03*

U.S. Cl. 422—48 **13 Claims**

1. An oxygenator, comprising:

an elongated hollow housing having a longitudinally extending axis;

a bundle of porous hollow fibers made of polyolefin resin arranged within the housing in the axial direction thereof, each fiber having an inner diameter of 100 to 300μ, a wall thickness of 10 to 50μ, an average pore size of 200 to 1,000Å and a porosity of 20 to 80%;

an oxygen chamber formed between the outer surface of the fiber bundle and the inner surface of the housing;

inlet and outlet oxygen ports extending through the wall of the housing so as to communicate with the oxygen chamber;

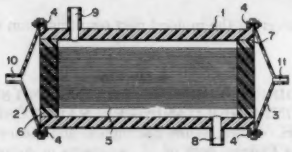
partition walls supporting the end portions of the hollow fibers, separating the open ends of the hollow fibers from the oxygen chamber and defining the length of the oxygen chamber; and

inlet and outlet blood ports communicating with the interior space of each of the hollow fibers;

the hollow fibers having polar radicals introduced into at least the outer surfaces of the polyolefin resin of the hollow fiber at the portions supported by the partition walls.

9. An oxygenator, comprising:

an elongated hollow housing having a longitudinally extending axis;



a bundle of porous hollow fibers made of polyolefin resin arranged within the housing in the axial direction thereof, each fiber having an inner diameter of 100 to 300μ, a wall thickness of 10 to 50μ, an average pore size of 200 to 1,000Å and a porosity of 20 to 80%;

an oxygen chamber formed between the outer surface of the fiber bundle and the inner surface of the housing;

inlet and outlet oxygen ports extending through the wall of the housing so as to communicate with the oxygen chamber;

partition walls supporting the end portions of the hollow fibers, separating the open ends of the hollow fibers from the oxygen chamber and defining the length of the oxygen chamber;

inlet and outlet blood ports communicating with the interior space of each of the hollow fibers; and

a radially inwardly directed projection provided on an inner wall of the housing for fastening a central portion, in the lengthwise direction, of the hollow fiber bundle relative to the housing.

4,239,730

AUTOCLAVE APPARATUS FOR STERILIZING OBJECTS

Hans A. Fahlvik, Sloinge, and Kurt E. Sandquist, Getinge, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Continuation of Ser. No. 762,346, Jan. 25, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,734

Claims priority, application Sweden, Jan. 26, 1976, 7600739

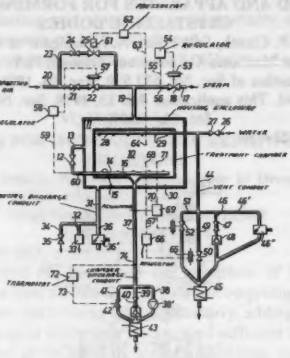
The portion of the term of this patent subsequent to Nov. 28, 1997, has been disclaimed.

Int. Cl.³ A61L *2/06, 2/24*

U.S. Cl. 422—109 **4 Claims**

1. In an autoclave for sterilizing objects comprising a treatment chamber, a supply conduit for steam, a supply conduit for compressed air, a discharge conduit, and a vent conduit, said autoclave being provided with a control system having a plurality of adjusting controlling valves, each of said adjusting controlling valves being operative with a respective steam supply conduit, compressed air supply conduit, discharge

conduit and vent conduit whereby said steam supply conduit is opened for heating of said chamber with the objects therein to sterilizing temperatures, whereupon before the sterilizing period occurs a first valve in the vent conduit and a second valve



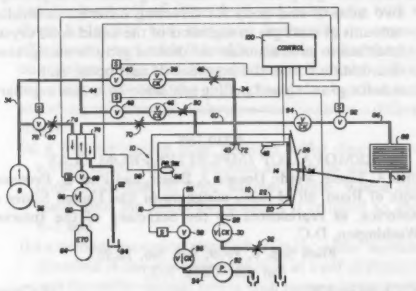
in the compressed air conduit are opened so that initially only the steam is supplied to said chamber until a given condition has been reached therein, said steam being thereafter replaced by means of a mixture of said steam and said compressed air.

4,239,731

APPARATUS FOR BIOCIDAL STERILIZATION USING CYCLIC SUBATMOSPHERIC PRESSURE CONDITIONING

John R. Gillis, Harborcreek, and Frank E. Halleck, Erie, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Division of Ser. No. 850,846, Nov. 11, 1977, Pat. No. 4,203,943.
This application Nov. 21, 1979, Ser. No. 96,489
Int. Cl.[3] A61L *5/00, 1/00, 3/00*
U.S. Cl. 422—112 **9 Claims**



1. Apparatus for conditioning goods in a sealed chamber and for subsequently sterilizing said goods with a chemical biocidal agent, the conditioning including moistening and heating to a desired temperature by subjecting the chamber and goods to a plurality of cyclic pressure pulses between predetermined subatmospheric pressure levels,

comprising, in combination,

a conditioning and sterilizing chamber capable of being evacuated to desired vacuum levels and operable within a maximum prescribed leakage rate,

first inlet conduit means connecting the chamber to a second inlet conduit means connecting the chamber to a source of a chemically biocidal agent source of conditioning vapor,

first inlet valve means connected in the first inlet conduit means and second inlet valve means connected in the second inlet conduit means and including power means for operating said second valve means to control the flow of chemical biocidal agent into the chamber including power means for operating said first valve means to control the flow of conditioning vapor into the chamber,

evacuation means for evacuating the chamber,

exhaust conduit means connecting the chamber to the evacuation means,

exhaust valve means connected in the exhaust conduit means and including power means for operating the exhaust valve to control the flow through the exhaust conduit to thereby control evacuation of the chamber by the evacuation means,

pressure sensing means including means for sensing lower and upper predetermined subatmospheric pressure levels in the chamber and for transmitting a signal in response to the sensing of such pressure levels, and

control means including

means responsive to signals from the pressure sensing means including,

means for generating operating signals for subjecting the chamber to a plurality of cyclic subatmospheric pressure pulses independent of preselected time intervals, and

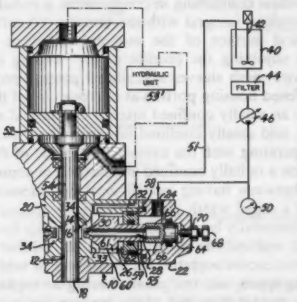
means for operating the power means of the exhaust and first inlet valve means in response to the generated operating signals to non-simultaneously and alternately open the exhaust valve means and close the first inlet valve means to exhaust the chamber to a lower predetermined subatmospheric pressure and to close the exhaust valve means and open the first inlet valve means to increase the pressure within the chamber to an upper predetermined subatmospheric pressure to control such cyclic subatmospheric pressure pulsing, said control means further including means operable at the termination of said conditioning for opening said second inlet valve means for initiating chemical biocidal sterilization.

4,239,732

HIGH VELOCITY MIXING SYSTEM

Fritz W. Schneider, Strasslach-Hailafing, Fed. Rep. of Germany, assignor to The Martin Sweets Company, Inc., Louisville, Ky.

Filed Apr. 13, 1979, Ser. No. 29,669
Int. Cl.[3] B01J *14/00;* **B67D** *5/56;* **F16K** *11/07*
U.S. Cl. 422—133 **14 Claims**



1. A mixing head for a high velocity reaction injection apparatus for mixing and dispensing at least two liquid components, each of the components supplied under pressure from a delivery system including a recirculation line to enable circulation of the respective component when the components are not being mixed, comprising:

(a) a housing defining a mixing chamber with an inlet for each component and an outlet for dispensing the mixed components;

(b) means for injecting each component through a different

one of the inlets into the mixing chamber including means for directing the component through a flow accelerating passage prior to injection into the mixing chamber, for imparting a pressure drop in the component on the downstream side of the passage, and a recirculation outlet communicating with the downstream side of the passage and adapted to be connected to the respective recirculation line;

(c) means for selectively blocking each inlet for interrupting the delivery of each component and thereby increasing the pressure of the component in the injection means downstream of the passage; and

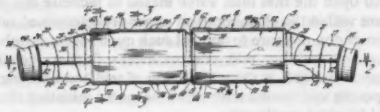
(d) means responsive to increased pressure downstream of the passage for directing the flow from the passage through the recirculation outlet when the inlet is blocked and for interrupting the flow through the recirculation outlet when the inlet is open and the component may be injected into the mixing chamber.

4,239,733

CATALYTIC CONVERTER HAVING A MONOLITH WITH SUPPORT AND SEAL MEANS THEREFOR

Michael R. Foster, Columbiaville, and Jack E. Smith, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 16, 1979, Ser. No. 30,125
Int. Cl.[3] F01N *3/28, 7/16, 7/18*
U.S. Cl. 422—179 **2 Claims**



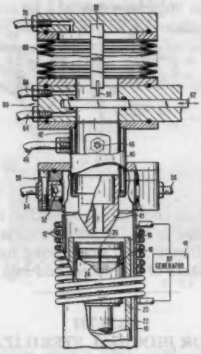
1. In a catalytic converter for internal combustion engine exhaust gases and of the type having a catalyst coated monolith of frangible material and cylindrical shape supported about the cylindrical surface thereof in a correspondingly shaped portion of a sheet metal clamshell type housing by a wire mesh sleeve which is mounted in the cylindrical space therebetween and is radially compressed a predetermined amount during converter assembly so as to retain resilient radial support and also relative axial location of the monolith as the housing expands with heat: the improvement comprising in combination, a radially ribbed cylindrical portion integral with the housing extending about the cylindrical surface of the monolith adjacent one end thereof and adjoining the portion of the housing extending about the wire mesh sleeve, said ribbed portion providing a radially stiffened housing portion at said one end of the monolith and also an axially confined interior cylindrical surface in the housing, said axially confined interior cylindrical housing surface cooperating with the cylindrical surface of the monolith to provide a radially confined annular seal accommodating space therebetween having partial axial confinement at the housing and a radial width dimension prior to converter heat up that is substantially larger than that of the space for the wire mesh sleeve, and cylindrical seal means of resilient heat expandable intumescent material for mounting in said seal accommodating space, said seal means having an expansion rate substantially greater than that of the housing and a preassembly radial thickness substantially smaller than that of the wire mesh sleeve but larger by a predetermined amount than said radial width dimension of said seal accommodating space so that the seal means is tightly received between the housing and the monolith during assembly of the converter and then in swelling on first heat up of the converter is resisted by said stiffened housing portion and is caused to exert restraining pressure between said stiffened housing portion and the monolith to establish and thereafter maintain tight sealing between the housing and monolith at the one end thereof while also remaining sufficiently resilient to assist the wire mesh sleeve in providing resilient radial support of the monolith and also relative axial location thereof as the housing expands with heat.

4,239,734

METHOD AND APPARATUS FOR FORMING SILICON CRYSTALLINE BODIES

Theodore F. Ciszek, Salt Point, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 677,579, Apr. 16, 1976, Pat. No. 4,116,641. This application Jul. 13, 1978, Ser. No. 924,329
Int. Cl.[3] C30B *15/34*
U.S. Cl. 422—246 **7 Claims**



1. Apparatus for forming an elongated crystalline ribbon-shaped body comprising:

means for providing a substantially constant source of molten material to be formed into said body;

a die having at least one capillary therein positioned partially submerged into said molten material so that the molten material moves into said capillary;

several inert gas parts positioned along each of the principal two sides of said body for directing different controlled amounts of inert gas to segments of the liquid-solid crystal interface so as to maintain the desired growth temeprature distribution across the interface of said body; and

means for growing and pulling said body from said capillary.

4,239,735

REMOVAL OF IMPURITES FROM CLAY

Judith A. Eisele, Verdi; Donald J. Bauer, and Paul R. Bremner, both of Reno, all of Nev., assignors to The United States of America, as represented by the Secretary of the Interior, Washington, D.C.

Filed Sep. 6, 1979, Ser. No. 72,957
Int. Cl.[3] C01F *7/22*
U.S. Cl. 423—126 **18 Claims**

1. A method for producing substantially pure alumina from aluminum-containing calcined kaolin clay, comprising the steps of:

(a) contacting the calcined clay with a solution comprising at least 36 weight percent hydrochloric acid, whereby said acid reacts with said clay to form soluble and insoluble reaction products, said insoluble products containing a major proportion of the aluminum content of said clay;

(b) maintaining said concentration of hydrochloric acid at at least 36 weight percent;

(c) separating the solids portion of the clay-reaction product-acid mixture from the liquid portion;

(d) washing said solids portion with a solution having a concentration of at least 36 weight percent hydrochloric acid;

(e) solubilizing the aluminum contained in said solids portion

by contacting with water having a temperature of about 25° to 100° C., or with a solution comprising about 26 weight percent hydrochloric acid and applying sufficient heat to drive off the hydrochloric acid content of the resulting solution, to separate it from the remainder thereof;

(f) precipitating said aluminum as substantially uncontaminated crystals of $AlCl_3.6H_2O$; and

(g) converting said crystals of $AlCl_3.6H_2O$ to alumina.

4,239,736
METHOD FOR INCREASING THE BRIGHTNESS OF LIMESTONE

Douglas H. Fenske, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 26, 1979, Ser. No. 15,089
Int. Cl.³ G01F *11/18*
U.S. Cl. 423—173 **9 Claims**

1. A method for improving the brightness of limestone, containing at least a small amount of iron comprising grinding said limestone and forming a limestone slurry, adding an acidic flocculating agent to the slurry in amounts sufficient to provide a pH between about 7 and 9, adding a bleaching agent to the slurry in at least an amount sufficient to react with any iron present and separating the flocculate from the slurry.

4,239,737
METHOD FOR REMOVING SULFUR DIOXIDE

Erminio Ermini, Genoa-Quarto, Italy, assignor to Italsider S.p.A., Genoa, Italy

Continuation-in-part of Ser. No. 867,449, Jan. 6, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,004
Claims priority, application Italy, Jan. 14, 1977, 12421 A/77
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 **7 Claims**

1. A method for removing sulfur dioxide contained in a mixture of combustion gases comprising:

contacting the mixture of gases containing sulfur dioxide with a countercurrent flow of an alkaline absorption solution having a pH of about 9–12 and containing both sodium hydroxide and manganic hydroxide in amounts effective to react with the sulfur dioxide, either the gaseous mixture or the absorbing solution or both also containing oxygen, whereby the sulfur dioxide is absorbed in the absorbing solution and undergoes reaction in two different stages:

(a) a first absorption stage wherein sulfur dioxide is absorbed in the alkaline solution and reacts with the sodium hydroxide to form sodium sulfite, which takes place until the pH of the solution is reduced to about 6–7 and

(b) a second absorption stage wherein the sulfur dioxide is absorbed in the absorption solution at a pH of about 6–7 and the sulfur dioxide reacts with manganic hydroxide, to form manganic sulfite and wherein in both stages the manganese and sodium sulfites are transformed into the corresponding manganese and sodium sulfates by the action of said oxygen on the presence of the manganic ion and also by the direct oxidizing action of the manganic ion,

regenerating the manganic hydroxide by adding sodium hydroxide to the spent absorption solution until the pH of the spent solution is about 9–12 and blowing air into the spent absorption solution in order to transform the manganese sulfate into manganic hydroxide and

regenerating sodium hydroxide by adding calcium hydrate to the spent absorption solution in excess of the amount necessary to transform the sodium sulfate therein to sodium hydroxide and calcium sulfate.

4,239,738
METHOD FOR PRODUCING BORON TRICHLORIDE

Kenneth W. Richardson, Canton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 7, 1979, Ser. No. 101,988
Int. Cl.³ C01B *35/06*
U.S. Cl. 423—292 **8 Claims**

1. In the process of producing boron trichloride by chlorination of borate ester wherein chlorine and borate ester are introduced into a liquid inert organic solvent in a reactor, thereby establishing a liquid reaction medium, and gaseous products of the chlorination reaction and vaporized solvent are removed from the reactor, the improvement which comprises, in combination, the steps of

(a) condensing vaporized solvent removed from the reactor in a heat exchange zone and returning the condensed solvent to the liquid reaction medium;

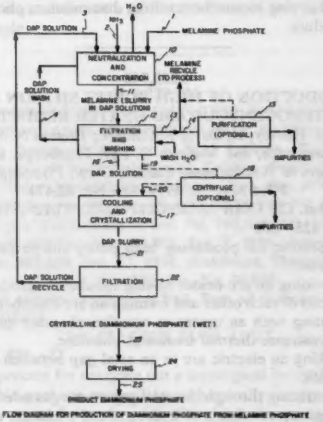
(b) removing a portion of the liquid reaction medium from the reactor and forwarding liquid reaction medium thus removed to an externally cooled heat extraction zone wherein the liquid reaction medium is cooled; and

(c) returning cooled liquid reaction medium to the reactor, thereby controlling the temperature of the liquid reaction medium within the reactor.

4,239,739
MANUFACTURE OF PURIFIED DIAMMONIUM PHOSPHATE

Richard C. Sheridan, Sheffield, and John F. McCullough, Florence, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Nov. 6, 1979, Ser. No. 91,853
Int. Cl.³ C01B *15/16*
U.S. Cl. 423—308 **4 Claims**



FLOW DIAGRAM FOR PRODUCTION OF DIAMMONIUM PHOSPHATE FROM MELAMINE PHOSPHATE

1. A process for the production of purified diammonium phosphate, which comprises the steps of:

(1) simultaneousiy introducing into reacting means a stream of relatively concentrated diammonium phosphate solution, a stream of melamine phosphate, a stream of anhydrous ammonia, and a stream of relatively dilute diammonium phosphate wash solution, said stream of relatively dilute diammonium phosphate wash solution recovered from a later-mentioned filtering and washing means, said streams of diammonium phosphate solutions and said stream of melamine phosphate proportioned to one another to maintain in said reactor means a diammonium phosphate:melamine phosphate weight ratio ranging from about 1.5 to about 15, and said stream of anhydrous ammo-

nia proportioned so as to maintain a pH in said reacting means ranging from about 7.0 to about 10.0;

(2) maintaining a temperature in said reacting means between about 25° C. and about 115° C. and maintaining the materials therein for a period of time ranging from about 1 to about 30 minutes to thereby form therein a slurry comprising diammonium phosphate solution and melamine crystals;

(3) removing at least a portion of said slurry from said reacting means and introducing same into filtering and washing means; removing from said filtering and washing means a substantially saturated solution of diammonium phosphate; recovering melamine crystals in said filtering and washing means and washing same with a stream of water; removing said washed melamine crystals for recycle to said reacting means; and removing the resulting relatively dilute diammonium phosphate wash solution for introduction into said reactor means in step (1) supra;

(4) introducing said substantially saturated diammonium phosphate removed from said filtering and washing means in step (3) supra into cooling and crystallizing means wherein same is cooled to a temperature ranging from about 0° C. to about 100° C., said cooling of said substantially saturated diammonium phosphate solution therein resulting in supersaturation of the resulting cooled solution and precipitation therein of crystals of diammonium phosphate yielding a slurry thereof;

(5) removing from said cooling and crystallizing means the resulting slurry of diammonium phosphate crystals and relatively concentrated diammonium phosphate solution, and introducing same into filtration means;

(6) separating in said filtration means the resulting relatively concentrated diammonium phosphate solution, removing same therefrom and introducing same into said reacting means; simultaneously removing from said filtration means the resulting crystalline diammonium phosphate; introducing same into drying means; and recovering from said drying means the resulting diammonium phosphate as product.

4,239,740

PRODUCTION OF HIGH PURITY SILICON BY A HETEROGENEOUS ARC HEATER REDUCTION

Francis J. Harvey, II; David F. Ciliberti; Thomas N. Meyer, all of Murrysville, and Maurice G. Fey, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 25, 1979, Ser. No. 42,474

Int. Cl.³ C01B *33/02;* **C01F** *11/20;* **C01D** *3/00*

U.S. Cl. 423—350 **5 Claims**

1. A process for producing high purity silicon comprising the steps of:

a. providing an arc heater having tubular electrodes axially spaced of each other and forming an arc chamber communicating with an upstream reaction chamber and with a downstream thermal treatment chamber,

b. striking an electric arc in an axial gap between the electrodes,

c. introducing through the axial gap an arc gas selected from the group consisting of hydrogen and a mixture of hydrogen and an inert gas to provide an elongated arc stream extending into the arc chamber,

d. feeding into the upstream reaction chamber a quantity of a metal reductant selected from the group consisting of an alkali metal and an alkaline-earth metal at a temperature range between the melting point and boiling point of the metal reductant,

e. feeding into the upstream reaction chamber a quantity of silicon halide to prereact with the metal reductant to produce droplets of reaction products including solid silicon particles mixed with liquid metal salt co-product and unreacted liquid metal reductant,

f. flowing the reaction products through the arc heater at a temperature greater than the boiling point of the salt to convert the reaction products into a mixture including the droplets of silicon, metal salt vapor, gaseous metal reductant and silicon halide,

g. flowing the mixture through the thermal treatment chamber to effect the reaction between vaporized unreacted metal reductant and silicon halide to produce small droplets of silicon which merge with larger silicon droplets from step (e), and

h. separating the mixture of silicon droplets and salt vapor.

4,239,741

PROCESS FOR PRODUCING HYDRAZINE SULFATE

Tomiya Isshiki; Tetsuo Tomita, both of Tokyo; Toshiaki Kozaki; Osamu Aoki, both of Matsudo; Mitsuo Abe, Tokyo; Norio Takeda; Mitsuo Miura, both of Matsudo; Yoshiyuki Aoki, Tokyo; Takao Kondo, Tokyo, and Kaoru Tsuyuki, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,166

Claims priority, application Japan, Nov. 7, 1977, 52/133322

Int. Cl.³ C01B *21/54*

U.S. Cl. 423—388 **7 Claims**

1. A process for producing hydrazine sulfate by hydrolysis of benzophenoneazines by sulfuric acid, which comprises using sulfuric acid having a concentration of from 40 to 60% by weight in an amount of 1.5 to 20 times by mole of the stoichiometric amount in the hydrolysis.

4,239,742

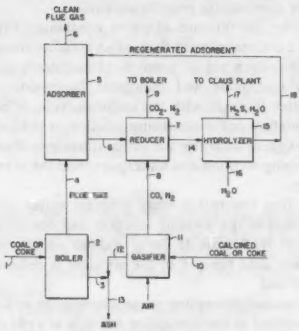
PROCESS FOR IMPROVING A GAS CONTAINING A MINOR AMOUNT OF SULFUR DIOXIDE IMPURITY AND PRODUCING A HYDROGEN SULFIDE-RICH GAS

William A. Blanton, Jr., Woodacre, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 26, 1978, Ser. No. 919,207

Int. Cl.³ C01B *17/16, 17/00;* **B01J** *8/00*

U.S. Cl. 423—563 **7 Claims**



1. A process for removing sulfur oxides from a feed gas, comprising the steps of:

(a) adsorbing sulfur oxides from said feed gas into an adsorbent at adsorption conditions including a temperature of about 90° C. to about 345° C., said adsorbent comprising a composite of sodium and vanadium as oxides or vanadate salts and a porous support including at least 80 weight percent alumina, and withdrawing the resulting gas from contact with said adsorbent;

(b) converting sulfur in adsorbed sulfur oxides to sulfide form in said adsorbent by contacting said adsorbent with a reducing gas comprising carbon monoxide and containing less than 1 volume percent water at a temperature of about 370° C. to about 815° C.; and

(c) forming hydrogen sulfide by contacting the absorbent

resulting from step (b) with steam at a temperature of about 90° C. to about 815° C.

4,239,743

CARRIER-BOUND IMMUNOGLOBULIN FISSION PRODUCT AND ITS USE IN IMMUNOLOGIC ANALYSES

Hans H. Sedlacek, and Friedrich R. Seiler, both of Marburg, Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Jul. 13, 1978, Ser. No. 924,283

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2731992; Apr. 28, 1978, 2818739

Int. Cl.[2] G01N *33/16;* A61K *39/00*

U.S. Cl. 424—1 13 Claims

1. An Fc-sensitive reagent consisting essentially of an immunoglobulin fission product having an immunologically-functioning Fc-portion, said product being bound to a carrier by adhesion or chemical reaction.

4. A method for determining an Fc-reactant, which method comprises contacting a liquid containing said Fc-reactant with an Fc-sensitive reagent as in claim 1, separating the carrier from the liquid, reacting the Fc-reactant bound to the carrier with an antibody reacting with said Fc-reactant but not capable of undergoing a cross-reaction with said immunoglobulin fission product, and determining the antibody.

4,239,744

RADIORECEPTOR ASSAY FOR BENZODIAZEPINES IN PLASMA AND OTHER BIOLOGICAL SPECIMENS

Steven M. Paul, Silver Spring, and Phil Skolnick, Bethesda, both of Md., assignors to United States of America, Washington, D.C.

Filed Oct. 10, 1978, Ser. No. 949,689

Int. Cl.[2] G01N *33/16;* A61K *43/00*

U.S. Cl. 424—1 7 Claims

1. A radioreceptor assay method for routinely determining the concentration of pharmacologically-active benzodiazepines, their pharmacologically-active metabolites, and mixtures thereof contained in a biological specimen selected from the group consisting of blood plasma, urine, cerebral spinal fluid, and saliva comprising:

(a) diluting the biological specimen with water;

(b) adding perchloric acid to the diluted biological specimen obtained in step (a) to obtain a mixture containing the protein of the biological specimen which is precipitated by said perchloric acid as well as the protein-free remainder of the biological specimen which is present as a supernatant liquid;

(c) separating the supernatant liquid containing the protein-free remainder of the biological specimen obtained in step (b) from the protein precipitate;

(d) diluting the supernatant liquid separated in step (c) with distilled water;

(e) adding at least about 1 ml of a synaptosomal membranes suspension, containing about from 0.5 to 5.0 mg of protein per ml of said synaptosomal membranes suspension, to the diluted supernatant liquid obtained in step (d);

(f) adding tritiated diazepam or tritated flunitrazepam, each having a specific radioactivity of about from 10 to 100 Ci/mmol, to the mixture containing the synaptosomal membranes and the supernatant liquid obtained in step (e);

(g) incubating the radioactive mixture obtained in step (f) at a temperature of about from 0° C. to 4° C. for about from 15 to 60 minutes;

(h) terminating the incubation carried out in step (g) with a wash containing about 5 ml of icecold 50 nM Tris buffer at a pH of about 7.4;

(i) filtering the incubate obtained in step (h) to obtain a mass comprising the said synaptosomal membranes and the tritiated diazepam or flunitrazepam bound thereto retained in the filter;

(j) washing the filter and mass retained therein obtained in step (i) with about 5 ml of said ice-cold buffer, and drying the said filter and mass retained therein;

(k) suspending the dried filter and mass retained therein obtained in step (j) in a liquid scintillatioin fluor; and

(l) measuring the radiation of said mass in the fluor of step (k) with a liquid scintillation counter from which measurements the concentratin of the benzodiazepines or their pharmacologically-active metabolites present in the biological specimen are determined.

4,239,745

ANTIBIOTIC DETECTION METHOD

Stanley E. Charm, Newton, Mass., assignor to Penicillin Assays, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 853,541, Nov. 21, 1977, abandoned, Ser. No. 914,414, Jun. 12, 1978. This application Nov. 22, 1978, Ser. No. 963,146

Int. Cl.[2] G01N *33/16;* A61K *43/00;* B65D *81/32*

U.S. Cl. 424—1 24 Claims

1. A process for detecting the presence of an antibiotic in a liquid sample, said process comprising the steps of:

A. incubating the sample with cells of a microorganism, said microorganism being sensitive to said antibiotic and having receptor sites capable of binding to said antibiotic, said incubation being conducted under conditions to allow antibiotic molecules, if present in the sample, to bind to said receptor sites;

B. incubating the mixture of step A with a tagged antibiotic capable of binding with said receptor sites;

C. separating the cells from the liquid;

D. determining the amount of tagged antibiotic associated either with the separated cells or with the liquid; and

E. comparing the determination of step D with a standard to obtain an indication of the presence of antibiotic in the sample.

4,239,746

COMPLEMENT FIXATION TEST EMPLOYING REACTANTS IN A DISPOSABLE PACKAGE

Dezsö I. Bartos, Buchenweg 3, 5024 Pulheim, Fed. Rep. of Germany, and Jerzy Rybczynski, Kolding, Denmark, assignors to Dezsö Istvan Bartos, Pulheim, Fed. Rep. of Germany

Division of Ser. No. 888,041, Mar. 16, 1978, Pat. No. 4,162,003, which is a continuation of Ser. No. 793,653, May 4, 1977, abandoned, and Ser. No. 693,801, Jun. 7, 1976, abandoned, and Ser. No. 483,659, Jun. 27, 1974, abandoned. This application Apr. 13, 1979, Ser. No. 29,806

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1973, 2333434

Int. Cl.[3] G01N *33/50, 33/52*

U.S. Cl. 424—12 2 Claims

1. A process for carrying out a serological investigation in a disposable package comprising a chemically inert transparent reaction vessel for performing a serological complement fixation test which contains reactants for said test comprising an antigen or antibodies to the antigen to be detected, hemolytic amboceptor and complement, said reactants being preserved in said vessel in frozen or freeze-dried form, each having been deep frozen or freeze-dried to form a separate layer or having been deep frozen or freeze-dried in separate areas of said vessel wherein said process comprises bringing said reactants into solution by thawing or adding a solvent for suitable adjustment of proportions of said reactants, adding 0.25 ml. of the patient's serum, which may contain the respective antigen or antibodies to be detected, incubating the resulting solution at 37° C. to effect a binding reaction and to use up the complement with formation of antigen-antibody complex, adding 2% sheep's erythrocyte suspension, again incubating at 37° C., then assessing the degree of haemolysis.

4,239,747

DICARBOXYLIC ACID BIS(3,5-DICARBAMOYL-2,4,6-TRIIODOANILIDES) USEFUL AS X-RAY CONTRAST AGENTS

Heinrich Pfeiffer, and Ulrich Speck, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

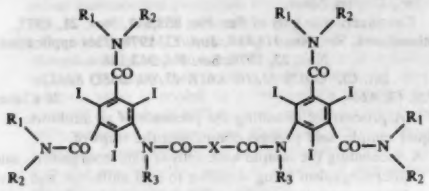
Continuation of Ser. No. 806,384, Jun. 14, 1977, abandoned. This application Jan. 12, 1979, Ser. No. 2,901

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628517

Int. Cl.[3] **C07C** *103/78;* **A61K** *29/02;* **C07C** *63/24*

U.S. Cl. 424—5 **20 Claims**

1. A compound of the formula



wherein

R_1 is alkyl of 2–8 carbon atoms substituted by 1–5 hydroxyl on separate carbon atoms thereof, other than the α-carbon atom;

R_2 is hydrogen, alkyl of up to 4 carbon atoms or R_1;

R_3 is hydrogen or alkyl of 1–4 carbon atoms;

X is a direct bond or straight-chain or branched-chain alkylene, oxaalkylene, dioxaalkylene, or trioxaalkylene of up to 6 carbon atoms, wherein the oxygen atoms of the di- and trioxaalkylenes are separated from each other and from the ends thereof by at least one methylene.

20. A method for conducting a radiological examination of a patient which comprises administering thereto prior to examination a radiopaque amount of a compound of claim 1.

4,239,748

INORGANIC SALTS OF 2,8-DICARBOXY-4,6-DIOXO-10-PROPYL-4H,6H-BENZO(1,2-b:5,4b')DIPYRAN USEFUL FOR THE TREATMENT OF ASTHMA AND HAY FEVER

Hugh Cairns; Kenneth Brown, both of Loughborough, and Roger E. C. Altouyan, Wilmslow, all of England, assignors to Fisons Limited, London, England

Filed Nov. 27, 1978, Ser. No. 963,813

Claims priority, application United Kingdom, Nov. 30, 1977, 49764/77

Int. Cl.[2] **A61L** *9/04;* **A61K** *31/35;* **C07D** *311/78*

U.S. Cl. 424—45 **12 Claims**

1. A salt of 2,8-dicarboxy-4,6-dioxo-10-propyl-4H,6H-benzo(1,2-b:5,4-b')dipyran with a pharmaceutically acceptable inorganic cation, the salt having a solubility of less than 3% w/w in water at 20.5° C.

12. A method of treatment of asthma or hay fever, which comprises administration of a salt according to claim 1 to a patient suffering from such a condition.

4,239,749

NEISSERIA GONORRHOEAE VACCINE

Thomas M. Buchanan, Seattle, Wash., assignor to United States of America, Washington, D.C.

Division of Ser. No. 889,343, Mar. 23, 1978. This application Sep. 27, 1979, Ser. No. 79,556

Int. Cl.[3] **A61K** *39/02*

U.S. Cl. 424—92 **1 Claim**

1. POMP antigen free of contaminants which are toxic to humans characterized by the ability to elicit a bactericidal response in humans, having subunits with molecular weights of from 34,000 to 39,000 Daltons, containing both hydrophobic and hydrophilic groups and having a carbohydrate content of about 4% and a protein content of about 96% by weight.

4,239,750

ANIMAL FEEDS CONTAINING A MIXTURE OF LINCOMYCIN OR OLEANDOMYCIN AND PROTEOLYTIC ENZYMES

Günter Hiller, Erkrath, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,281

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802398

Int. Cl.[3] **A23K** *1/17, 1/165*

U.S. Cl. 424—94 **12 Claims**

1. A high efficiency animal feed for chickens and pigs comprising carbohydrates, protein and fats and containing from 1 to 250 ppm of an antibiotic selected from the group consisting of lincomycin and oleandomycin, and a content of acid proteolytic enzymes with a wide spectrum of activity in the range of between a pH of 2.5 and 6.5 in such an amount that the enzymatic activity is from 0.05 to 2.5 mTU/gm of said animal feed.

4,239,751

ANTIBIOTIC SUBSTANCES

Carolina Coronelli; Grazia Beretta; Maria R. Bardone, and Francesco Parenti, all of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Continuation of Ser. No. 847,641, Nov. 1, 1977, abandoned, which is a continuation of Ser. No. 661,910, Feb. 27, 1976, abandoned. This application Apr. 16, 1979, Ser. No. 30,492

Claims priority, application United Kingdom, Mar. 5, 1975, 9057/75

Int. Cl.[2] **A61K** *35/00*

U.S. Cl. 424—118 **7 Claims**

1. The antibiotic substance named teichomycin A_2 having the following characteristics:

(1) Melting point: 260° C. (with decomposition);

(2) Elemental analysis (average of three determinations): C=54.20%; H=5.70%; N=6.80%; Cl=3.30%; O (by difference)=30%;

(3) Ultraviolet absorption spectrum (FIG. 1):

Solvent	λ_{max} (nm)	$E^{1\%}_{1cm}$
phosphate buffer pH 7.38	278	55
hydrochloric acid 0.1 N	278	53
sodium hydroxide 0.1 N	297	74;

(4) I.R. absorption spectrum in nujol mull (FIG. 2): The most important absorption bands occur at the following frequencies (cm^{-1}): 3300 (broad), ~2900 (nujol), 1720 (shoulder), 1660, 1600 (shoulder), ~1500, 1455 (nujol), 1375 (nujol), 1235, 1190–930, 850, 720 (broad);

(5) Solubility: soluble in aqueous solution at pH 7.0, aqueous sodium bicarbonate, diluted aqueous solutions of alkali hydroxides, methanol-water mixtures; partially soluble in methanol and ethanol; insoluble in diluted mineral acids and in non-polar organic solvents;

(6) Characteristic reactions:

Fehling	positive
Tollens	positive
$KMnO_4$	positive
$FeCl_3$	positive
H_2SO_4 concentrated	dark violet color
Folin Ciocolteu	positive
Griess	negative
Antrone	negative

-continued

Schiff	negative;

(7) Potentiometric titrations: an ionizable function is potentiometrically evidenced in water solutions with a pKa value=4.9; a basic function is evidenced by titration with $HClO_4$ in DMSO solutions; the equivalent weight determined accordingly is 1170;

(8) Chromatographic pattern:

(a) on Whatman Paper No. 1, a cotton fibre cellulose filter paper with the following characteristics; weight, 85–95 g/m^2; thickness, 0.16 mm; ash content, 0.06–0.07%:

	ELUTING SYSTEM	Rf
(1)	Butanol saturated with phosphate buffer m/15 pH 6.0	0.0
(2)	Butanol saturated with water containing 2% of p-toluenesulfonic acid	0.13
(3)	Butanol saturated with water containing 2% ammonium hydroxide	0.0
(4)	Phosphate buffer M/15 pH 6.0 saturated with butanol	0.25
(5)	20% Aqueous solution of NH_4Cl	0.0
(6)	Butanol:methanol:water (40:10:20) with 0.75% of methyl orange	0.37
(7)	Butanol:methanol:water (40:10:20)	0.41
(8)	Ethyl acetate saturated with water	0.0
(9)	n-propanol:n-butanol:NH_4OH 10 N (2:3:4)	0.43

(b) on silica gel thin layer

ELUTING SYSTEM	Rf
n-propanol:ethyl acetate: concentrated NH_4OH (2:1:2)	0.1.

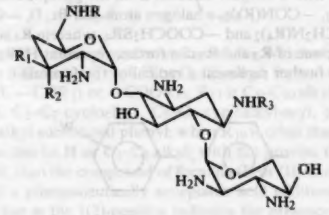
4,239,752

O-DEMETHYLSELDOMYCIN FACTOR 5 DERIVATIVES

Ronald E. Carney, Gurnee; Robert L. Devault; James B. McAlpine, both of Libertyville, and Arthur C. Sinclair, Lake Forest, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,255
Int. Cl.[3] A61K *31/71*; C07H *15/22*
U.S. Cl. 424—180 14 Claims

1. A 3-O-demethylseldomycin factor 5 derivative represented by the formula



wherein: R is hydrogen or loweralkyl; R_1 and R_2 can be either hydrogen or hydroxy with the limitation that both R_1 and R_2 cannot be hydroxy; R_3 is selected from the group consisting of hydrogen, loweralkyl, aminoloweralkyl, diaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, aminohydroxyloweralkyl, N-loweralkylaminoloweralkyl or

and R_4 is selected from the group consisting of loweralkyl, aminoloweralkyl, diaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, aminohydroxyloweralkyl and N-loweralkylaminohydroxyloweralkyl, with the limitation that when R_1 is hydroxy, R_3 cannot be hydrogen when R is hydrogen, and the pharmaceutically acceptable salts thereof.

14. A pharmaceutical composition comprising an antibacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

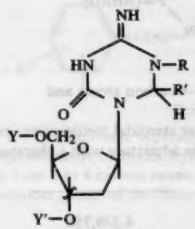
4,239,753

COMPOSITION OF MATTER AND PROCESS

Harvey I. Skulnick, Oshtemo Township, Kalamazoo County, and Harold E. Renis, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 802,504, Jun. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 715,663, Jun. 19, 1976. This application Dec. 12, 1978, Ser. No. 968,876
Int. Cl.[3] A61K *31/71*, *31/70*
U.S. Cl. 424—181 22 Claims

1. A process for treating susceptible DNA viral infectious disease in humans and animals which comprises administering to said human or animal viral host a therapeutic amount for treating susceptible DNA viral infections of a compound of the formula:



wherein R' is selected from the group consisting of hydrogen and lower alkyl; Y is selected from the group consisting of hydrogen, carboxacyl of from 1 to 18 carbon atoms, and phosphono; Y' is selected from the group consisting of hydrogen and carboxacyl of from 1 through 18 carbon atoms; R is selected from the group consisting of hydrogen, methyl, ethyl, n-propyl, isopropyl, phenyl, benzyl, cyclopropyl, loweralkoxylower-alkyl, and lower-alkylthiolower-alkyl; and pharmaceutically acceptable salts thereof, in combination with a pharmaceutical carrier.

4,239,754

LIPOSOMES CONTAINING HEPARIN AND A PROCESS FOR OBTAINING THEM

Edgar Sache, Bures-sur-Yvette, and Henri Bertrand, Chatillon-sur-Bagneux, both of France, assignors to Choay, S.A., Paris, France

Filed Oct. 25, 1977, Ser. No. 845,106
Claims priority, application United Kingdom, Oct. 23, 1976, 44132/76; Aug. 16, 1977, 33410/77
Int. Cl.[3] A01N *43/16*
U.S. Cl. 424—183 2 Claims

1. A method for the control of blood coagulability in vivo comprising orally adminstering in an amount effective to control blood coagulation a pharmaceutical composition comprising orally administrable heparin-liposomes, the lipids of which are formed of non-toxic physiologically acceptable and metab-

olizable phospholipids, with heparin retained therein or thereon in association with a pharmaceutical vehicle.

2. A method for the control of blood coagulability in vivo comprising orally administering in an amount effective to control blood coagulation a pharmaceutical composition comprising orally administrable heparin-liposomes, the lipids of which comprise lecithin, with heparin retained therein or thereon in association with a pharmaceutical vehicle.

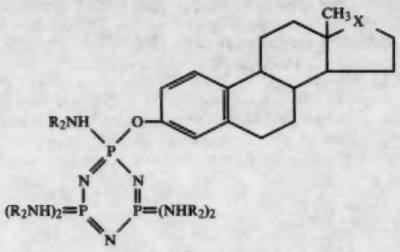
4,239,755

STEROIDAL CYCLOTRIPHOSPHAZENES

Harry R. Allcock; Timothy J. Fuller, and Kiyotoshi Matsumura, all of State College, Pa., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jun. 28, 1979, Ser. No. 52,728
Int. Cl.³ A01N *9/36;* **A61K** *31/66;* **C07J** *43/00*
U.S. Cl. 424—209 **9 Claims**

1. A compound of the formula



wherein

R_2 is alkyl of 1–4 carbon atoms and

X is CH_2 or C=O.

8. A slow release steroidal medicament, comprising a compound of claim 1, in admixture with a pharmaceutically acceptable carrier.

4,239,756

FATTY ALDEHYDES IN THE THERAPY OF ARTERIOSCLEROSIS

Wilhelm Hörrmann, Staltacherstr. 34, D 8121 Iffeldorf, Obb, Fed. Rep. of Germany

Division of Ser. No. 787,902, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 682,309, May 3, 1976, abandoned, which is a continuation-in-part of Ser. No. 600,375, Jul. 30, 1975, abandoned, which is a continuation-in-part of Ser. No. 450,458, Mar. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 274,754, Jul. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 805,934, Feb. 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 634,884, May 1, 1967, abandoned, which is a continuation-in-part of Ser. No. 412,862, Nov. 20, 1964, abandoned, which is a continuation-in-part of Ser. No. 211,827, Jul. 24, 1962, abandoned, which is a continuation-in-part of Ser. No. 824,798, Jul. 3, 1959, abandoned. This application May 22, 1978, Ser. No. 908,365
Int. Cl.² A61K *31/11, 31/335, 31/575*
U.S. Cl. 424—238 **1 Claim**

1. A method of treating arteriosclerosis in a patient comprising administered to said patient 50 mg/kg-150 mg/kg daily of at least one of the geometric and optical isomers of

6-n-dodecenoic aldehyde

8-n-hexadecenoic aldehyde

6,12-n-octadecadienoic aldehyde or

8,16-n-tetracosadienoic-2-hydroxy-aldehyde per se or as an ether of glycerol or physiological acids of bile, said isomer being in the form of capsule or emulsion.

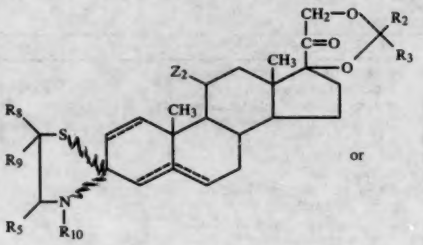
4,239,757

THIAZOLIDINE PRODRUGS FOR THE IMPROVED DELIVERY OF ANTI-INFLAMMATORY CORTICOSTEROIDS

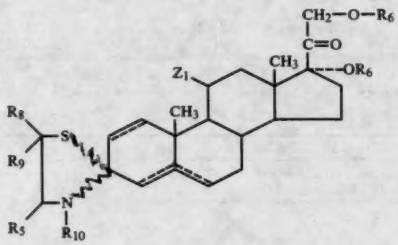
Nicholas S. Bodor, Gainesville, Fla., and Kenneth B. Sloan, Eudora, Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

Continuation-in-part of Ser. No. 924,305, Jul. 13, 1978, abandoned. This application Jul. 24, 1979, Ser. No. 60,220
Int. Cl.³ C07J *71/00*
U.S. Cl. 424—241 **32 Claims**

1. A compound having the structural formula



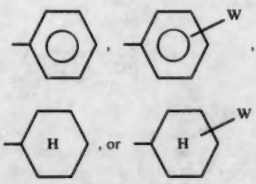
(I)



(II)

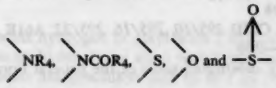
wherein Z_1 is=0 or β—OH; Z_2 is=0, β—OH or β—OR_1; R_1 represents a radical of the formula

R_4 is H or C_1–C_{10} alkyl; R_2 and R_3, which may be the same or different, are each C_1–C_8 alkyl, or substituted C_1–C_8 alkyl, wherein at least one of the hydrogen atoms therein has been replaced with a member selected from the group consisting of $—N(R_4)_2$, $—CON(R_4)_2$, a halogen atom (Cl, Br, I), $—COOR_4$, $—COOCH_2N(R_4)_2$ and $—COOCH_2SR_4$, wherein R_4 is defined as above; one of R_2 and R_3 can further represent H; R_2 and R_3 can each further represent a radical of the formula

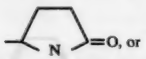


wherein W represents a member selected from the group consisting of $—N(R_4)_2$, $—CON(R_4)_2$, a halogen atom (Cl, Br, I),

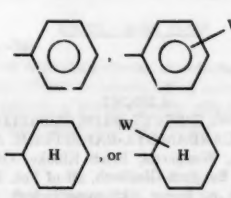
—$COOR_4$, —$COOCH_2N(R_4)_2$ and —$COOCH_2SR_4$, wherein R_4 is defined as above; or R_2 and R_3 taken together can further represent —$(CH_2)_n$— wherein n is an integer of 5 to 7, or —$(CH_2)_n$— wherein n is defined as above and wherein one or more carbon atoms has been replaced with a member selected from the group consisting of



wherein R_4 is defined as above; R_6 is H or —COR_7, with the proviso that at least one of the R_6's in formula (II) is H; R_7 is C_1–C_{12} alkyl, C_5–C_7 cycloalkyl, C_2–C_{12} alkenyl or C_5–C_7 cycloalkenyl, or substituted C_1–C_{12} alkyl, substituted C_5–C_7 cycloalkyl, substituted C_2–C_{12} alkenyl or substituted C_5–C_7 cycloalkenyl wherein the substituents are selected from the group consisting of —$N(R_4)_2$, —$CON(R_4)_2$, a halogen atom (Cl, Br, I), —$COOR_4$, —$COOCH_2N(R_4)_2$ and —$COOCH_2SR_4$, wherein R_4 is defined as above; R_7 can further represent a radical of the formula



an alkylene-$(CO)_mNR_2R_3$ radical wherein m is 0 or 1, the alkylene portion is straight or branched and contains 1 to 6 carbon atoms and R_2 and R_3 are defined as before; or R_7 can be an imidazolyl or a 2-, 3- or 4-pyridyl group, or a substituted imidazolyl or 2-, 3- or 4-pyridyl group wherein at least one of the hydrogen atoms has been replaced with a member selected from the group consisting of —$N(R_4)_2$, —$CON(R_4)_2$, —SOR_4, a halogen atom (Cl, Br, I), —$COOR_4$, —$COOCH_2N(R_4)_2$ and —$COOCH_2SR_4$ wherein R_4 is defined as above; or R_7 represents a radical of the formula



wherein W is defined as above; R_8 and R_9, which may be the same or different, are each H or C_1–C_8 alkyl; R_5 is —$COOR_{11}$; R_{10} is H, —COR_{11} or —$COOR_{11}$; R_{11} is C_5–C_{20} alkyl, C_2–C_{20} alkenyl, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkyl-aryl, phenyl or C_1–C_4 alkyl-substituted phenyl; when R_{10} is other than H, then R_{11} can also be H or C_1–C_4 alkyl; with the proviso that when R_{10} is H, then the compound of formula (I) or (II) can be in the form of a pharmaceutically acceptable acid addition salt; the dotted line at the 1(2)-position indicates the presence of either a single or a double bond at the 1(2)-position; and the dotted lines at the 4(5)- and 5(6)-positions indicate the presence of a double bond at either the 4(5)- or the 5(6)-position.

31. A pharmaceutical composition of matter comprising an anti-inflammatory effective amount of a compound of claim **1**, in combination with a nontoxic, pharmaceutically acceptable, inert carrier therefor.

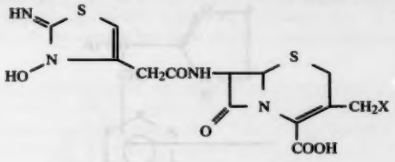
4,239,758

CEPHALOSPORINS

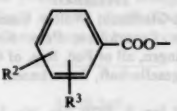
Mitsuo Numata; Masayoshi Yamaoka, both of Osaka; Isao Minamida, Kyoto; Mitsuru Shiraishi, Osaka, and Tatsuo Nishimura, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Division of Ser. No. 783,230, Mar. 31, 1977, Pat. No. 4,172,891. This application May 31, 1979, Ser. No. 44,215
Claims priority, application Japan, Apr. 2, 1976, 51/37374
Int. Cl.[3] **C07D** *501/34*
U.S. Cl. 424—246 **12 Claims**

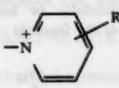
1. A cephalosporin derivative of the formula:



wherein X is hydrogen, hydroxyl, an acyloxy selected from the group consisting of alkylcarbonyloxy group of 2 to 4 carbon atoms; acetyloxy group substituted by an alkylcarbonyl group of 2 to 4 carbon atoms; phenylacetyloxy group which may be substituted at the α-position by hydroxyl, sulfo or amino group; alkylcarbonyloxy group of 2 to 4 carbon atoms as substituted by a carboxyl group; and a group of the formula:



wherein R^2 and R^3, respectively, represent hydrogen, carboxyl, carboethoxycarbamoyl carboethoxysulfamoyl or nitro, alkoxy containing from 1 to 4 carbon atoms, carbamoyloxy or a quaternary ammonium group of the formula:



wherein R^4 is hydrogen, methyl, carbamoyl, carboxy, sulfonic or methoxy, or a pharmaceutically acceptable salt or ester thereof.

12. A pharmaceutical antibiotic composition containing a therapeutically effective amount of the compound claimed in claim **1** together with a pharmaceutically acceptable excipient or diluent therefor.

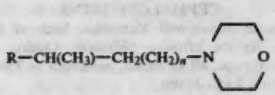
4,239,759

MORPHOLINO CONTAINING COMPOUNDS, COMPOSITIONS AND USE THEREOF

Joachim Gante; Hans-Adolf Kurmeier; Erich Schacht; Werner Mehrhof; Dieter Orth; Albrecht Wild, and Zdenek Simane, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 624,762, Oct. 22, 1975, Pat. No. 4,110,447. This application Apr. 11, 1978, Ser. No. 895,417
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1974, 2450989; May 28, 1975, 2523565
Int. Cl.[3] **C07D** *295/06;* **A61K** *31/535*
U.S. Cl. 424—248.4 **4 Claims**

1. An araliphatic nitrogen compound of the formula



wherein R is 4-biphenylyl monosubstituted or polysubstituted by F, Cl and/or Br; and n is 0, 1 or 2, or a physiologically acceptable acid addition salt thereof.

3. A pharmaceutical composition comprising in unit dosage form an antiinflammatorily effective amount of a compound of claim 1 in admixture with a pharmaceutically acceptable carrier.

4,239,760

COMBATING FUNGI AND BACTERIA WITH 3-AZOLYL-BENZO-1,2,4-TRIAZINES AND 1-OXIDES THEREOF

Klaus Sasse, Berg.-Gladbach; Walter Gauss, Cologne; Paul-Ernst Frohberger, Leverkusen; Peter Kraus, Cologne, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

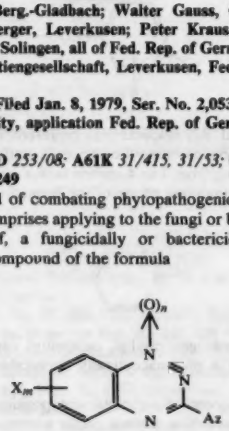
Filed Jan. 8, 1979, Ser. No. 2,053

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802488

Int. Cl.[3] **C07D** *253/08;* **A61K** *31/415, 31/53;* **C07D** *403/04*

U.S. Cl. 424—249 **9 Claims**

1. A method of combating phytopathogenic fungi or bacteria which comprises applying to the fungi or bacteria, or to a habitat thereof, a fungicidally or bactericidally effective amount of a compound of the formula



in which

X represents halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylmercapto, C_1–C_4 alkylsulphonyl, nitro or trifluoromethyl,

m represents 0, 1, 2, 3 or 4, the substituents X being selected independently of one another when m is 2 or more,

n represents 0 or 1 and

Az represents a five-membered hetero-aromatic ring with 2 or 3 nitrogen atoms, which is bonded via nitrogen and which can be optionally substituted by alkyl, alkoxy or alkylmercapto with 1 to 6 carbon atoms in each case, halogen, hydroxyl, phenyl, phenalkyl, NH_2, a monoalkylamino or dialkylamino group with 1 to 2 carbon atoms in the or each alkyl group, C_{1-4}-alkoxy-C_{1-4}-alkoxy, lower alkanoyl amino, carboxyl, a carboxylic acid ester or optionally N-C_{1-4}-alkyl-substituted carboxamido group or cyano.

4,239,761

BASICALLY SUBSTITUTED UREAS AND PROCESSES FOR THE TREATMENT OF VIRUS DISEASES

Rolf Rebling; Gerhard Scheffler; Klaus Pressler, all of Bielefeld, and Klaus D. Schenk, Steinhagen, all of Fed. Rep. of Germany, assignors to Asta-werke Aktiengesellschaft, Chemische Fabrik, Bielefeld, Fed. Rep. of Germany

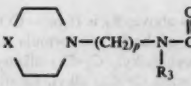
Filed Aug. 23, 1979, Ser. No. 69,335

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837794

Int. Cl.[3] **C07D** *295/10, 295/16, 295/22;* **A61K** *31/495*

U.S. Cl. 424—250 **5 Claims**

1. Basically substituted ureas of the general Formula I



wherein

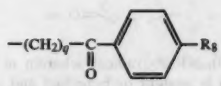
X is the group R_4—N<,

p is 2 or 3,

R_1 is an alkyl group having from 6 to 18 carbon atoms,

R_2 and R_3, which may be the same or different from each other, are methyl or ethyl and

R_4 is the methyl sulfonyl group, the diethyl carbamoyl group or the group



wherein q is 1 or 2 and R_8 is methyl, methoxy, chlorine or bromine, and the pharmacologically acceptable salts thereof.

4. Process for the treatment of humans or animals suffering from a diseases caused by viruses comprising administering to said human or animal a compound according to claim 1 topically in a dose ranging from 0.005 to 0.3 percent by weight or parenterally in a daily dose ranging from 5 to 250 mg per kg body weight of the human or animal to be treated.

4,239,762

COMBATING INSECTS WITH SUBSTITUTED 5-PHENYLCARBAMOYL-BARBITURIC ACIDS

Wolfgang Krämer, Wuppertal; Erich Klauke, Odenthal, and Peter Roessler, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

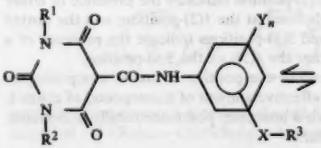
Filed Jul. 9, 1979, Ser. No. 55,572

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832698

Int. Cl.[3] **A01N** *43/54;* **C07D** *239/62*

U.S. Cl. 424—254 **9 Claims**

1. A 5-substituted-phenyl carbamoyl-barbituric acid of the formula



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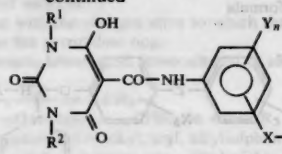


in which

R^1 represents hydrogen or alkyl with 1 to 4 carbon atoms,

R^2 represents hydrogen or alkyl with 1 to 4 carbon atoms,

R^3 represents halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms, or phenyl substituted by halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms,

X represents oxygen or sulphur,

Y represents halogen or halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms, and

n represents 0, 1 or 2, or

X—R^3 and Y in the ortho-position to one another conjointly may alternatively represent the —O—CF_2—O—CF_2- group,

or a salt thereof with a physiologically tolerated base.

7. An arthropodicidal composition containing as active ingredient an arthropodicidally effective amount of a compound or salt according to claim 1 in admixture with a diluent.

4,239,763

α-BLOCKING AGENTS IN THE TREATMENT OF OBESITY

Maria Milavec, St. Louis, France, and Heribert Wagner, Pfeffingen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 952,380, Oct. 18, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,055

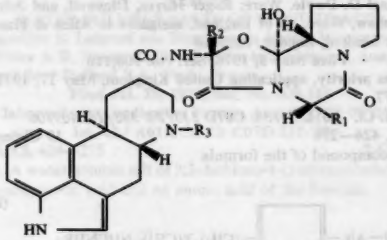
Claims priority, application United Kingdom, Oct. 24, 1977, 44147/77

Int. Cl.³ A61K *31/48*

U.S. Cl. 424—261 **4 Claims**

1. A method of treating obesity or reducing body weight in animals in need of such treatment which comprises administering to said animals a therapeutically effective amount of a 9,10-dihydro-ergot-peptide of the formula

I



wherein

R_1 is isopropyl, isobutyl, sec. butyl or benzyl,

R_2 is methyl, ethyl or isopropyl and

R_3 is methyl or isopropyl.

4,239,764

SUBSTITUTED 2-PHENYLAMINO-2-IMIDAZOLINES AND SALTS THEREOF

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, and Wolfgang Hoefke, Budenheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,582

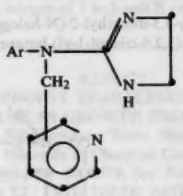
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831143

Int. Cl.³ A61K *31/415*; C07D *401/02*

U.S. Cl. 424—263 **3 Claims**

1. A compound of the formula

(I)



wherein Ar represents a radical selected from the group consisting of 2,6-dichlorophenyl, 2,5-dichlorophenyl, 2-chloro-6-methylphenyl, 2-chloro-4-methylphenyl, 2,6-dichloro-4-bromophenyl, 4-cyanophenyl, 2,5-dimethoxyphenyl, and 2-methyl-5-fluorophenyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

2. A bradycardiac pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective bradycardiac amount of a compound of claim 1.

4,239,765

FLUORENYL-AZOLYLMETHYL-CARBINOL COMPOUNDS AND THEIR MEDICINAL USE

Erik Regel; Karl Büchel; Ingo Haller, and Manfred Plempel, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 92,804

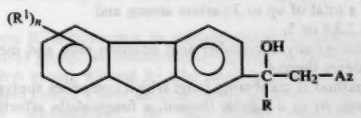
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2851143

Int. Cl.³ C07D *233/60*; A61K *31/415*; *31/41*

U.S. Cl. 424—269 **14 Claims**

1. A fluorenyl-azolylmethyl-carbinol of the formula

(I)



or a physiologically acceptable acid addition salt thereof in which Az denotes an imidazol-1-yl, 1,2,4-triazol-1-yl or 1,3,4-triazol-1-yl radical, R denotes a phenyl, benzyl, naphthyl, naphthylmethyl, tetrahydronaphthyl or tetrahydronaphthylmethyl radical optionally substituted by halogen, straight-chain or branched alkyl or alkoxy with in each case 1 to 4 carbon atoms, or halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, R^1 denotes a fluorine, chlorine or bromine atom or an alkyl group with 1 to 4 carbon atoms, and n is 0, 1 or 2.

12. A method of combating mycoses in warm-blooded animals which comprises administering to the animals an antimycotically effective amount of an active compound according to claim 1 either alone or in admixture with a diluent or in the form of a medicament.

4,239,766
COMBATING FUNGI WITH 1-(4-PHENOXY)-3,3-DIMETHYL-2-(N-HALOGENOALKYLMERCAPTO-CARBAMOYLOXY)-1-(1,2,4-TRIAZOL-1-YL)-BUTANES

Wolfgang Krämer; Karl H. Büchel, both of Wuppertal; Engelbert Kühle, Bergisch-Gladbach; Paul-Ernst Frohberger, Leverkusen, and Wilhelm Beandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

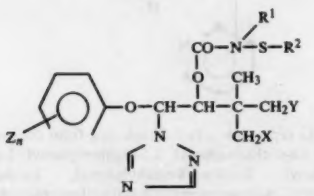
Filed Jun. 7, 1979, Ser. No. 46,283

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2827968

Int. Cl.³ A01N *47/12;* **C07D** *249/08*

U.S. Cl. 424—269 **12 Claims**

1. A 1-(4-phenoxy)-3,3-dimethyl-2-(N-halogenoalkylmercapto-carbamoyloxy)-1-(1,2,4-triazol-1-yl)-butane of the formula



in which

R^1 is alkyl with 1 to 4 carbon atoms, phenyl or phenyl substituted with halogen, alkyl with 1 or 2 carbon atoms, cyano or nitro,

R^2 is halogenoalkyl with 1 or 2 carbon atoms and up to 5 halogen atoms,

X is hydrogen or halogen,

Y is hydrogen or halogen,

Z each independently is halogen; cyano; nitro; alkyl with up to 4 carbon atoms; cycloalkyl with 5 to 7 carbon atoms; halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms; alkoxycarbonyl with a total of up to 5 carbon atoms; alkoxy with up to 2 carbon atoms; alkylthio with up to 2 carbon atoms; or optionally substituted phenyl, optionally substituted phenoxy or optionally substituted phenylalkyl with 1 or 2 carbon atoms in the alkyl part, the optional substituents on the phenyl nuclei being selected from halogen, amino, cyano, nitro and alkyl with 1 or 2 carbon atoms, the alkyl part of the phenylalkyl radical being optionally substituted by alkylcarbonyloxy with a total of up to 3 carbon atoms; and

n is 0,1,2,3,4 or 5,

and physiologically acceptable acid addition salts and metal salt complexes thereof.

11. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,239,767
ANTIMYCOTIC DIARYLOXY-IMIDAZOLYL-O,N-ACETALS

Karl H. Büchel, Leverkusen; Wolfgang Krämer, and Manfred Plempel, both of Wuppertal-Elberfeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

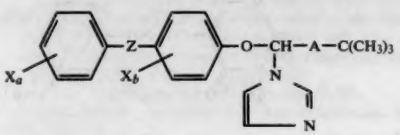
Filed Nov. 6, 1975, Ser. No. 629,215

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1974, 2455954

Int. Cl.³ A61K *31/415;* **C07D** *233/60*

U.S. Cl. 424—273 R **139 Claims**

101. A method of treating mycoses in humans and animals which comprises administering to a human or animal in need thereof an anti-mycotically effective amount of a compound of the formula



(I)

or a pharmaceutically acceptable, nontoxic salt thereof, wherein

X and Y are each halo, lower alkyl, lower alkoxy, halo(-lower alkylthio), nitro, amino, lower alkylamino or di(-lower alkyl)amino;

Z is methylene, oxygen, sulphur, sulphonyl, lower alkoxymethylene or a keto moiety;

A is a keto moiety or the moiety C(OH)R, wherein R is hydrogen or lower alkyl;

a and b are each integers from 0 to 3; and Z is a direct bond when A is the moiety C(OH)R as above defined, in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

4,239,768
METHOD FOR RELIEVING IRRITABLE BOWEL SYNDROME SYMPTOMS

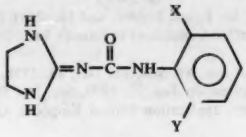
Chris R. Rasmussen, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Dec. 22, 1978, Ser. No. 972,580

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **6 Claims**

1. A method for relieving the symptoms associated with irritable bowel syndrome which comprises administering to an animal having said syndrome a therapeutically effective amount of a urea compound represented by the formula



wherein X and Y are selected from methyl, ethyl, chloro and bromo; and pharmaceutically acceptable salts thereof.

4,239,769
PHARMACOLOGICALLY ACTIVE COMPOUNDS

Barry J. Price, Hertford; John W. Clitherow, Sawbridgeworth; Michael D. Dowle, Ware; Roger Hayes, Digswell, and John Bradshaw, Ware, all of England, assignors to Allen & Hanburys Limited, London, England

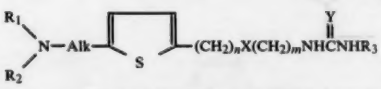
Filed May 5, 1978, Ser. No. 903,116

Claims priority, application United Kingdom, May 17, 1977, 20659/77

Int. Cl.³ A61K *31/38;* **C07D** *333/20, 333/24, 409/06*

U.S. Cl. 424—274 **19 Claims**

1. A compound of the formula



(I)

and physiologicially acceptable salts and hydrates thereof, in which

R_1 and R_2, which may be the same or different, represent hydrogen or lower alkyl, or

R_1 and R_2, together with the nitrogen atom to which they are attached form the pyrrolidino ring;

R_3 represents hydrogen, lower alkyl, lower alkenyl or alkoxyalkyl;

X represents —O—, —S— or —CH_2—;

Y represents =S, =O, =NR_5 or =CHR_6; in which R_5 is hydrogen, nitro, cyano, lower alkyl, aryl, alkylsulphonyl or arylsulphonyl and R_6 represents nitro, alkylsulphonyl or arylsulphonyl;

m is an integer from 2 to 4 inclusive;

n is 1 or 2 or, when X is S or CH_2, n is zero, 1 or 2; and Alk denotes a straight or branched alkylene chain of 1 to 6 carbon atoms.

12. A pharmaceutical composition for treating a condition of hypersecretion of gastric acid mediated through histamine H_2-receptors comprising an effective amount of a compound as claimed in claim **1** in association with a pharmaceutically acceptable carrier or diluent.

18. A method of treating a condition of hypersecretion of gastric acid mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound as claimed in claim **1** to relieve said condition.

4,239,770

SUBSTITUTED 2-PYRROLIDINONES FOR COUNTERACTING CEREBRAL INSUFFICIENCY

Emilio Kyburz, Reinach, and Werner Aschwanden, Ettingen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

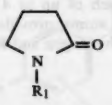
Filed Feb. 2, 1979, Ser. No. 8,674

Claims priority, application Switzerland, Feb. 10, 1978, 1404/78

Int. Cl.³ A61K *31/40*

U.S. Cl. 424—274 **2 Claims**

1. A method of counteracting cerebral insufficiency and improving intellectual capacity in a mammal comprising administering to said mammal, in an amount sufficient to counteract cerebral insufficiency and improve intellectual capacity, a compound of the formula



I

wherein R1 is o-methoxybenzoyl, m-methoxybenzyl, p-methoxybenzyl or p-fluorobenzyl, and a pharmaceutically acceptable inert carrier material.

4,239,771

WATER-SOLUBLE SALTS OF TIENILIC ACID

Jacqueline S. Laforest nee Boutillier du Retail, Vincennes, and Pierre A. R. Bessin, Chilly-Mazarin, both of France, assignors to Albert Rolland S.A., Paris, France

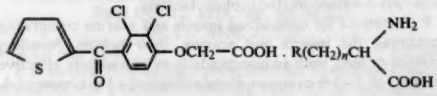
Filed Jul. 28, 1978, Ser. No. 929,114

Claims priority, application France, Aug. 4, 1977, 77 24061

Int. Cl.³ A61K *31/38;* **C07D** *333/28*

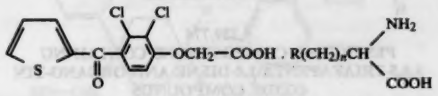
U.S. Cl. 424—275 **7 Claims**

1. A water-soluble salt of 2,3-dichloro-4-(2-thienylcarbonyl)-phenoxyacetic acid and an amino acid of the formula:



in which n is an integer of 1 to 5 and R represents an amino or guanidino group.

7. A method of treatment which method comprises administering to a human patient in need of such treatment a diuretically or uricosurically effective amount of a water-soluble salt of 2,3-dichloro-4-(2-thienylcarbonyl)-phenoxyacetic acid and an amino acid of the formula:



in which n is an integer of 1 to 5 and R represents an amino on guanidino group.

4,239,772

ALLYL AND PROPYL ZEARALENONE DERIVATIVES AND THEIR USE AS GROWTH PROMOTING AGENTS

Mohammed T. Shipchandler, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed May 30, 1979, Ser. No. 43,801

Int. Cl.³ C07D *313/00;* **A61K** *31/365*

U.S. Cl. 424—279 **7 Claims**

1. 4-O-Allylzearalenone.

7. A method for producing a growth-promoting effect in an animal comprises administering to the animal a sufficient amount of a compound of claim **1**, **2**, **3** or **4** to promote the growth of the animal.

4,239,773

INSECTICIDAL ESTERS OF CERTAIN SUBSTITUTED 7-OXABICYCLO[2.2.1]2,5-HEPTADIENE METHANOLS

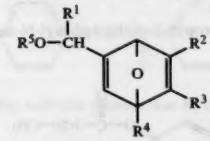
William A. Van Saun, Jr., Titusville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 11,334, Feb. 12, 1979, abandoned. This application Dec. 17, 1979, Ser. No. 104,201

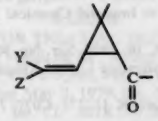
Int. Cl.³ A01N *45/12;* **C07D** *307/00*

U.S. Cl. 424—285 **8 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, an ethynyl group, a cyano group, a haloalkyl group, an aminocarbonyl group, or an aminothioxomethyl group; R^2 and R^3, the same or different, are nitro, halogen, cyano, lower alkyloxycarbonyl, lower alkylsulfinyl, lower alkylsulfonyl, or the group —$CONR^6R^7$ or —$SO_2NR^6R^7$ where R^6 and R^7 are independently hydrogen, lower alkyl, or halo(lower)alkyl; R^4 is phenyl, benzyl or benzoyl, optionally substituted with halogen or lower alkyl; R^5 is 2,2,3,3-tetramethylcyclopropylcarbonyl, 1-(4-chlorophenyl)-2-methylpropyl-1-carbonyl, or a cyclopropanecarboxylic acid residue of the formula



wherein Y and Z, the same or different, are hydrogen, halogen,

lower alkyl, haloalkyl, phenyl optionally substituted with halogen or lower alkyl, or phenylthio optionally substituted with halogen or lower alkyl.

7. A method for controlling insects which comprises applying to the insect or to a locus where control is desired an insecticidally effective amount of the compound of claims 1, 2, 3, 4, or 5.

4,239,774

PESTICIDAL COMPOSITIONS CONTAINNG 1,3,5-TRIAZAPENTA-1,4-DIENE AND ORGANO-TIN OXIDE COMPOUNDS

John C. Kerry, and David M. Weighton, both of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

Continuation of Ser. No. 920,156, Jun. 29, 1978, abandoned. This application Nov. 16, 1979, Ser. No. 94,838

Claims priority, application United Kingdom, Jul. 1, 1977, 27539/77

Int. Cl.[3] **A01N** *55/04, 37/52*

U.S. Cl. 424—288 **8 Claims**

1. An acaricidal composition comprising as essential active ingredients 1,5-di-(2,4-dimethylphenyl)-3-methyl-1,3,5-triazapenta-1,4-diene and an organo-tin compound selected from the group consisting of tricyclohexyltin hydroxide and di[tri-(2-methyl-2-phenylpropyl)tin]oxide, the essential active ingredients being present in a ratio of between 1:4 to 4:1 by weight.

4,239,775

2-(1-METHYLPROPYN-2-YL-THIO)-PHENYL-N-METHYLCARBAMATE AND ITS USE FOR COMBATING PESTS OF THE ACARINA ORDER

Hans-Peter Loeffler, Ludwigshafen; Karl Kiehs, Lampertheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

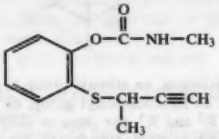
Filed Aug. 15, 1979, Ser. No. 66,554

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837407

Int. Cl.[3] **C07C** *125/067;* **A61K** *31/27*

U.S. Cl. 424—300 **2 Claims**

1. 2-(1-methylpropyn-2-yl-thio)-phenyl-N-methylcarbamate of the formula



2. A process for combating pests from Acarina order, wherein 2-(1-methylpropyn-2-yl-thio)-phenyl-N-methylcarbamate is allowed to act on the pests or their habitat.

4,239,776

ANTI-ANDROGENIC AMIDES

Alasdair T. Glen, and Richard W. Bayles, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

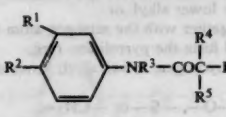
Filed Oct. 10, 1978, Ser. No. 950,142

Claims priority, application United Kingdom, Oct. 12, 1977, 42454/77

Int. Cl.[3] **A61K** *31/275;* **C07C** *121/78*

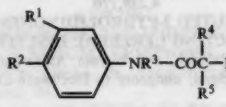
U.S. Cl. 424—304 **8 Claims**

1. An acylanilide of the formula:



wherein R^1 is cyano, nitro, trifluoromethyl or iodo, or has the formula $—CONR^{11}R^{12}$, and wherein R^2 is cyano, nitro, trifluoromethyl, chloro, bromo or iodo, or has the formula $—CONR^{11}R^{12}$, wherein R^{11} and R^{12}, which may be the same or different, each is hydrogen or alkyl of up to 4 carbon atoms; wherein R^3 is hydrogen or alkyl of up to 4 carbon atoms; wherein either R^4 and R^5, which may be the same or different, each is alkyl of up to 4 carbon atoms; or R^4 and R^5 are joined together with the adjacent carbon atom to form cycloalkyl of 3 or 4 carbon atoms; and wherein R^6 is hydrogen, hydroxy, halogen, alkyl, hydroxyalkyl or alkoxy each of up to 4 carbon atoms, or acyloxy of up to 15 carbon atoms provided that at least one of R^1 and R^2 is cyano.

8. A method of producing an antiandrogenic effect in a warm-blooded animal in need of such an effect which comprises administering to said animal an effective amount of an acylanilide of the formula:



wherein at least one of R^1 and R^2 is cyano and wherein the other of R^1 and R^2 is cyano, nitro, trifluoromethyl, chloro, bromo or iodo, or has the formula $—CONR^{11}R^{12}$, wherein R^{11} and R^{12}, which may be the same or different, each is hydrogen or alkyl of up to 4 carbon atoms; wherein R^3 is hydrogen or alkyl of up to 4 carbon atoms; wherein either R^4 and R^5, which may be the same or different, each is alkyl of up to 4 carbon atoms; or R^4 and R^5 are joined together with the adjacent carbon atom to form cycloalkyl of 3 or 4 carbon atoms; and wherein R^6 is hydrogen, hydroxy, halogen, alkyl, hydroxy-alkyl or alkoxy each of up to 4 carbon atoms, or acyloxy of up to 15 carbon atoms; provided that when R^2 is cyano; R^3 and R^6 are both hydrogen and R^4 and R^5 are both methyl, R^1 is not chloro.

4,239,777

(−)-α-CYANO-M-PHENOXYBENZYL(+)-α-ISOPROPYL-4-DIFLUOROMETHOXYPHENYLACETATE

Gerald Berkelhammer, Princeton, and Venkataraman Kameswaran, Princeton Junction, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 890,586, Mar. 20, 1978, Pat. No. 4,199,595, which is a continuation-in-part of Ser. No. 814,600, Jul. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 728,818, Oct. 1, 1976, abandoned. This application Nov. 28, 1979, Ser. No. 98,001

Int. Cl.[3] **A01N** *37/34;* **C07C** *121/75*

U.S. Cl. 424—304 **4 Claims**

1. The compound (−)-α-cyano-m-phenoxybenzyl-(+)-α-isopropyl-4-difluoromethoxyphenylacetate.

2. A method for controlling insects and acarina comprising contacting the insects and acarina, their habitat, breeding grounds or feed, with an insecticidally or acaricidally effective amount of (−)-α-cyano-m-phenoxybenzyl(+)-α-isopropyl-4-difluoromethoxyphenylacetate.

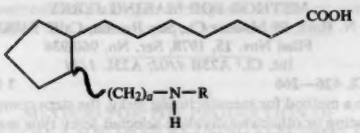
4,239,778

AZAPROSTANOIC ACID ANALOGS AND THEIR USE AS INHIBITORS OF PLATELET AGGREGATION

Duane L. Venton, Villa Park; Guy C. Le Breton, Chicago, both of Ill., and Steven E. Enke, Lutz, Fla., assignors to The University of Illinois Foundation, Urbana, Ill.

Filed Sep. 12, 1978, Ser. No. 941,678
Int. Cl.[3] C07C *101/04;* A61K *31/557*
U.S. Cl. 424—305 9 Claims

1. Azaprostanoic acids of the formula



wherein: R is C_1 to C_8 alkyl or benzyl; and a has a value of from 0 to 6 inclusive, and their pharmaceutically acceptable salts and lower alkyl esters.

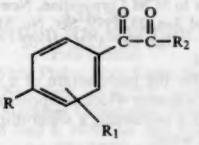
4,239,779

USE OF PHENYLGLYOXYLIC ACIDS AND DERIVATIVES THEREOF IN THE TREATMENT OF ISCHEMIC HEART DISEASE

Ian T. Barnish, Ramsgate; Peter E. Cross, Canterbury; John C. Danilewicz, Ash, Nr. Canterbury; Malcolm Morville, Margate, all of England, and Michael G. Page, Waterford, Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 915,904, Jun. 16, 1978. This application Sep. 14, 1979, Ser. No. 75,730
Int. Cl.[3] A61K *31/19, 31/235*
U.S. Cl. 424—317 8 Claims

1. A method for treating ischemic heart disease in a human subject having such condition which comprises orally or parenterally administering to said human subject an ischemic heart disease treating amount of a compound selected from the group consisting of a compound of the formula



wherein R is selected from the group consisting of hydrogen, alkyl having from one to four carbon atoms, hydroxy, alkoxy having from one to four carbon atoms, alkylthio having from one to five carbon atoms, alkanoyloxy having from two to four carbon atoms, chloro, fluoro, bromo and iodo; R_1 is selected from the group consisting of hydrogen, alkyl having from one to four carbon atoms, chloro, fluoro, bromo and iodo; R_2 is selected from the group consisting of hydroxy or alkoxy having from one to four carbon atoms; and a pharmaceutically acceptable base salt wherein R_2 is hydroxy.

4,239,780

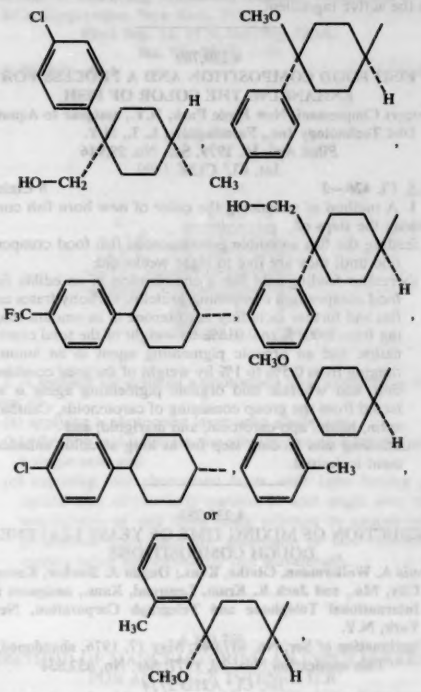
PHOSPHOLIPASE A_2 INHIBITION

Donald P. Wallach, Richland, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

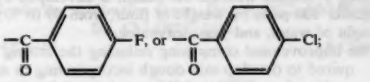
Filed Oct. 11, 1979, Ser. No. 84,022
Int. Cl.[3] A61K *31/135*
U.S. Cl. 424—330 1 Claim

1. A method for treating a phospholipase A_2 mediated condition (PMC) in a mammal suffering from the development of said PMC which comprises administering to said mammal an amount of a compound of formula I:

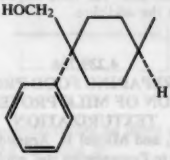
wherein R_1 is $R_1—N(R_3)—CH_2—CH_2—CH_2—R_2$



R_2 is



R_3 is H or CH_3, with the proviso that R_3 is $-CH_3$ only when R_1 is



or a pharmacologically acceptable acid addition salt or salt hydrate thereof, effective to treat said PMC.

4,239,781

METHOD FOR TREATING SKIN AILMENTS

Roy Edwards, 1415 Highland Dr., Solana Beach, Calif. 92075

Continuation of Ser. No. 876,203, Feb. 9, 1978, abandoned. This application May 3, 1979, Ser. No. 35,604
Int. Cl.[3] A61K *31/08*
U.S. Cl. 424—342 3 Claims

1. A method of treating skin ailments, comprising flaking of the skin, athlete's foot, dandruff and eczema consisting of

topically applying to the portion of the skin in an amount to wet the skin, a composition consisting of a polyalkylene glycol as the active ingredient.

4,239,782

FISH FOOD COMPOSITION AND A PROCESS FOR ENHANCING THE COLOR OF FISH

Robert Cinquemani, New Hyde Park, N.Y., assignor to Aquatic Diet Technology Inc., Farmingdale, L. I., N.Y.

Filed Apr. 16, 1979, Ser. No. 29,916
Int. Cl.³ C12K *1/00*
U.S. Cl. 426—2 **5 Claims**

1. A method of enhancing the color of new born fish comprising the steps of:

feeding the fish an edible proteinaceous fish food composition until they are five to eight weeks old;

thereafter feeding said fish a combination of an edible fish food composition comprising proteins, carbohydrates and fats and further including testosterone in an amount ranging from 0.003% to 0.018% by weight of the total combination and an organic pigmenting agent in an amount ranging from 0.5% to 1% by weight of the total combination, and wherein said organic pigmenting agent is selected from the group consisting of carotenoids, Canthaxantin, lutein, apo-carotonal, and marigold; and

continuing said feeding step for as long as color enhancement is desired.

4,239,783

REDUCTION OF MIXING TIME OF YEAST LEAVENED DOUGH COMPOSITIONS

Louis A. Wollermann, Olathe, Kans.; Dugan A. Rucker, Kansas City, Mo., and Jack K. Krum, Leawood, Kans., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 687,048, May 17, 1976, abandoned. This application Nov. 18, 1977, Ser. No. 852,834
Int. Cl.³ A21D *2/14*
U.S. Cl. 426—25 **4 Claims**

1. In a process for the preparation of a yeast leavened dough composition by the straight dough and sponge and dough mixing processes wherein the dough is developed by mixing together 100 parts by weight of flour, from 50 to 70 parts by weight of water, and yeast leavening,

the improvement comprising reducing the mixing time required to develop said dough incorporating in said composition from 0.001 to 0.015 parts by weight of an additive selected from the group consisting of sorbic acid and the sodium, potassium and calcium salts of sorbic acid and mixing said composition to develop said dough for a time substantially less than the time required to develop said dough without the additive.

4,239,784

METHOD FOR PREPARING FOOD PRODUCTS FROM A SUSPENSION OF MILK PROTEINS WITH TEXTURIZATION

Richard J. Guiraud, and Michel R. Arnaud, both of Vendome, France, assignors to Fromageries Bel, societe anonyme, Paris, France

Continuation of Ser. No. 742,911, Nov. 17, 1976, abandoned. This application Jul. 6, 1978, Ser. No. 922,450
Claims priority, application France, Dec. 5, 1975, 75 37374
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—104 **26 Claims**

1. A method for preparing food products from a hydrated paste based on milk proteins, comprising the steps of

(1) providing a hydrated paste of milk proteins comprising a homogeneous mixture prepared from an aqueous casein suspension wherein the content of milk proteins with respect to the paste is about 10% to about 45%, the water content is about 35 to about 85% and the dry material content is at least equal to about 15% wherein said milk proteins further contain phosphorous in amount effective to produce phosphocaseinate bridges;

(2) molding said paste to prepare a texturized product in the form of ribbons, fibers, granules or bits, and

(3) subjecting the paste to a thermal treatment at a temperature between about 50° C. and about 150° C., for a time sufficient and up to about 3 hours to produce phosphocaseinate bridges between casein molecules.

4,239,785

METHOD FOR MAKING JERKY

Eldon N. Roth, 99 Madera Ct., San Ramon, Calif. 94583

Filed Nov. 15, 1978, Ser. No. 960,936
Int. Cl.³ A23B *4/02*; A23L *1/31*
U.S. Cl. 426—266 **7 Claims**

1. In a method for manufacturing jerky, the steps comprising

grinding or otherwise dividing selected jerky type materials to have a desired extrudable consistency,

blending the divided materials with curing agents and seasonings selected for jerky preparation,

providing a refrigerated rotating drum having a peripheral heat transfer surface,

applying the blended material onto the heat transfer surface of the drum to form a uniform thickness sheet upon its heat transfer surface and maintaining the blended material in intimate contact with the heat transfer surface,

cooling said sheet of blended material upon the heat transfer surface of the drum to form a solidified sheet suitable for cutting,

removing said sheet of cooled, blended material from the drum and cutting it into individual jerky strips, and

transferring the individual strips of jerky from the cutting station and transporting them through a drying chamber means for removing excess moisture from the individual jerky strips.

4,239,786

COFFEE WHITENER AND USE OF FLUID SHORTENING THEREIN

Cecilia Gilmore, and Donald E. Miller, both of Strongsville, Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,994
Int. Cl.³ A23C *11/02*
U.S. Cl. 426—601 **19 Claims**

1. A method for the manufacture of a fluid composition useful as a coffee whitener which comprises mixing together as major ingredients a sweetener, a water-dispersible protein, a lipid system, and water;

wherein said lipid system is a shortening comprising hydrogenated, beta-forming, predominantly C_{16}–C_{18} fat which is bland in flavor having an IV between about 85–100 and an SFI at 50° F. of about 10–18; and stably suspended therein, a crystalline, normally solid phase fat or fatty acid derived food stabilizer component in an amount sufficient to form a stable shortening dispersion; and an emulsifying amount of an oil/water emulsifier;

said shortening at room temperature being pumpable but sufficiently stiff to resist phase separation of ingredients;

said mixing being carried out while metering said shortening into remaining ingredients of the composition.

4,239,787

SEMITRANSPARENT AND DURABLE PHOTOLITHOGRAPHY MASKS

John A. Rentschler, Brick Township, Ocean County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 25, 1979, Ser. No. 51,848
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 **4 Claims**

1. A method of producing photolithography masks, trans-

parent to a portion of the visible spectrum, comprising the steps of:

(a) depositing positive photoresist (14) onto a light transparent substrate (15) to achieve a uniform coating;

(b) baking the deposited photoresist to fix the same;

(c) selectively exposing said photoresist to ultraviolet radiation;

(d) developing said photoresist to remove the exposed portions thereof and further CHARACTERIZED BY the step of

(e) bombarding said photoresist with electrons and ions in a predominantly nitrogen atmosphere to convert said photoresist to a material opaque to ultraviolet light.

4,239,788

METHOD FOR THE PRODUCTION OF SEMICONDUCTOR DEVICES USING ELECTRON BEAM DELINEATION

William A. Beck, Ellicott City, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Jun. 15, 1979, Ser. No. 49,003
Int. Cl.³ B05D 3/06
U.S. Cl. 427—43.1 **9 Claims**

1. A process for forming a delineated vapor deposition grown film of a deposition material on a substrate wherein the film is grown by exposing the substrate to the vapor of the deposition material comprising the steps of:

irradiating preselected areas of the substrate, in the presence of a carbon containing gas, with a first electron beam which is capable of altering the surface properties of said preselected areas, heating said substrate to a temperature at which carbon deposits on the irradiated areas, allowing carbon to deposit on said preselected areas, and then

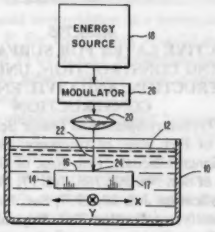
exposing the substrate to the vapor of the deposition material, whereby little or no deposition material will deposit on said preselected areas but will deposit on the areas of the substrate which were not exposed to the electron beam.

4,239,789

MASKLESS METHOD FOR ELECTROLESS PLATING PATTERNS

Samuel E. Blum, White Plains; Zlata Kovac, Somers, and Robert J. von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1979, Ser. No. 37,073
Int. Cl.³ B05D 3/06
U.S. Cl. 427—53.1 **7 Claims**



1. A method for selectively electrolessly plating of a surface of a workpiece comprising the steps of:

contacting the surface with a non-photo decomposable electroless plating solution; and

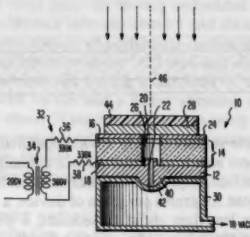
directing an energy beam onto the workpiece to locally heat the surface to promote enhanced plating.

4,239,790

METHOD OF DEFINING A PHOTORESIST LAYER

Wolfram A. Bösenberg, Monmouth Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 12, 1979, Ser. No. 75,162
Int. Cl.³ B05D 3/06
U.S. Cl. 427—54.1 **5 Claims**



1. A method for defining a photoresist layer comprising the steps of:

(a) applying a photoresist layer onto a substrate;

(b) vibrating said substrate, the vibratory motion being along a single axis; and

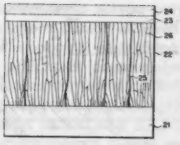
(c) exposing said photoresist layer with light having an optical axis substantially parallel to said single axis, the wavelength of said light being selected to expose said photoresist layer, and the amplitude of said vibratory motion being approximately one wavelength.

4,239,791

METHOD OF MANUFACTURING AN INPUT SCREEN FOR AN IMAGE INTENSIFIER

Tomiya Sonoda, Machida, and Hiroshi Washida, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 29, 1978, Ser. No. 964,519
Claims priority, application Japan, Dec. 5, 1977, 52-145149
Int. Cl.² G01T 1/16
U.S. Cl. 427—64 **8 Claims**



1. A method of manufacturing an input screen for an image intensifier comprising the steps of:

(1) depositing a phosphor of alkaline metal halide on one side of a substrate to produce a phosphor layer consisting of columnar crystals extending in a direction substantially perpendicular to the plane of the substrate;

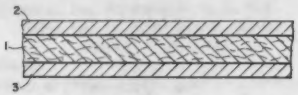
(2) treating the surface of the phosphor layer with a liquid material having a lower boiling point than 100° C. which liquid is incapable of dissolving the deposited phosphor, and producing cracks in said phosphor layer extending in a direction substantially perpendicular to the plane of the substrate, thereby forming a large number of optically independent phosphor blocks defined by said cracks; and

(3) depositing a photoemissive layer on the thus deposited and coated phosphor layer.

4,239,792
SURFACE WIPING DEVICE

Raymond J. Ludwa, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 5, 1979, Ser. No. 9,722
Int. Cl.[3] B32B *27/14*
U.S. Cl. 428—198 **10 Claims**

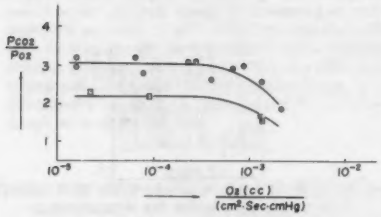


1. A disposable surface wiping device comprising one inner absorbent element and at least two surface contacting elements wherein said surface wiping device has an absorbent capacity greater than about 5.9 grams per gram of device, a dry horizontal wicking rate less than about 16 seconds, a wet horizontal wicking rate less than about 16 seconds, a distribution factor of from about 0.2 to about 1.7, and an effective use time greater than about 40 seconds; wherein said surface contacting elements each have an absorbent capacity greater than about 6.5 grams per gram of element, a wet horizontal wicking rate less than about 27 seconds, and a compressibility of from about 15 to about 35%; wherein said inner absorbent element has an absorbent capacity greater than about 6.5 grams per gram of element, a dry horizontal wicking rate less than about 30 seconds, and a wet horizontal wicking rate less than about 20 seconds; and wherein said surface wiping device is strong enough for practical use and leaves a wiped surface essentially dry.

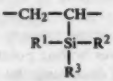
4,239,793
GAS SEPARATION MEMBRANE

Junichi Matsuura, Kamakura, and Yukio Yamaguchi, Tokyo, both of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

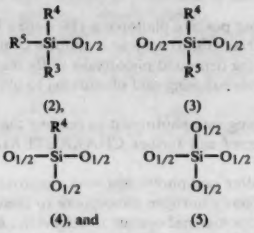
Filed Oct. 11, 1978, Ser. No. 950,442
Claims priority, application Japan, Oct. 14, 1977, 52-123183
Int. Cl.[2] B32B *15/06;* B01D *59/12, 13/00*
U.S. Cl. 428—216 **7 Claims**



1. A gas separation membrane which comprises a mixture of (A) a polyvinyltriorganosilane having main units of the formula


(1)

wherein R^1 represents a hydrogen atom, an alkyl, a cycloalkyl or an aryl group, and R^2 and R^3 independently represent an alkyl, a cycloalkyl or an aryl group; and (B) an organopolysiloxane having main units selected from the group consisting of:


(2), (3)

(4), and (5)

wherein R^4, R^5 and R^6 are selected from the group consisting of alkoxy, hydroxy, hydrogen, and the same or different unsubstituted or halogen-substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl or alkaryl groups; or R^4, R^5, R^6 taken together may form a ring, and $O_{\frac{1}{2}}$ represents an oxygen atom connected to two Si atoms in a Si—O—Si bond;

wherein the ratio of polyvinylorganosilane and organopolysiloxane is 1:0.05 to 1 by weight; and

wherein the viscosity of the polysilane is greater than about 50 cm^3/g.

4,239,794
PROCESS OF DISPERSING ELECTRO-CONDUCTIVE CARBON BLACK AND WEB PRODUCT MADE THEREBY

Adrien W. Allard, Colora, Md., assignor to Ludlow Corporation, Needham Heights, Mass.

Continuation-in-part of Ser. No. 733,137, Oct. 18, 1976. This application Aug. 4, 1978, Ser. No. 931,142
Int. Cl.[3] B32B *5/30, 27/02, 27/14, 33/00*
U.S. Cl. 428—219 **4 Claims**

1. An electroconductive sheet formed of a permeable nonwoven fibrous web comprising a maximum surface electroresistivity of about 200,000 ohms per square and carrying electroconductive an carbon black coating on the surfaces of the fibers from which said sheet is formed, said sheet being formed by a process comprising the steps of

(1) dispersing said conductive carbon black in a latex binder using an effective quantity of a dispersing agent selected from a chlorinated organic dispersing agents and an organic phosphate dispersing agents,

(2) impregnating the resulting dispersion of carbon black into said web and coating the surface of said fibers with said dispersion, and

(3) drying residual water from the surface of the fibers, leaving a thin coating of carbon block dispersed on the surfaces of said fibers.

4,239,795
PROTECTIVE LAYER FOR SURFACE SEALS IN BUILDING CONSTRUCTION, UNDERGROUND CONSTRUCTION, AND CIVIL ENGINEERING CONSTRUCTION

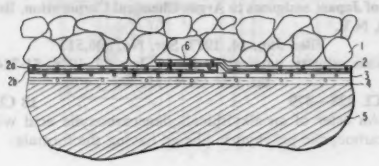
Karl Haage, Troisdorf-Spich, and Dieter Scharff, Troisdorf-Sieglar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 596,765, Jul. 17, 1975, abandoned. This application Jul. 22, 1977, Ser. No. 818,232
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1974, 2434328
The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.
Int. Cl.[2] B32B *5/04;* E04B *1/66;* B32B *27/12*
U.S. Cl. 428—247 **25 Claims**

1. A protective covering for the protection of surface seals against mechanical damage due to a load or impact of a sharp-edged material in building construction, underground con-

struction, and civil engineering construction, said covering comprising a composite of an elastic, tough, waterproof thermoplastic synthetic resin topcoat bonded to a resilient lattice-like fabric having fibers joined together at junctions that yield under the effect of a load, said topcoat consisting of two layers of thermoplastic synthetic resin having differing compositions, an upper topcoat layer having a higher weatherability due to the addition of stabilizers and a lower filler content as compared to a lower topcoat layer.

14. A terrace construction which comprises a load-bearing



substrate, at least one thermoplastic film sheet overlying said load-bearing substrate, a protective covering comprising a composite of an elastic, tough, waterproof thermoplastic synthetic resin topcoat bonded to a resilient lattice-like fabric having fibers joined together at junctions that yield under the effect of a load, said top-coat consisting of two layers of thermoplastic synthetic resin having differing compositions, an upper top-coat layer having a higher weatherability due to the addition of stabilizers and a lower filler content as compared to a lower top-coat layer, and a gravel load placed on said protective covering.

4,239,796

IN-MOLD COATING OF STRUCTURAL FOAMS AND RESULTANT PRODUCT

Henry Shanoski, and Richard M. Griffith, both of Akron, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Jun. 21, 1979, Ser. No. 50,902
Int. Cl.³ B32B 5/18; B29D 27/00
U.S. Cl. 428—315 **10 Claims**

1. The method which comprises in-mold coating a molded structural foam part of a thermoplastic resin selected from the group consisting of an aromatic polycarbonate resin and an ABS polymer resin with a thermosetting in-mold coating composition and heating said composition at a temperature not in excess of about 200° F. for from about 1 to 10 minutes at a pressure of from about 25 to 50 p.s.i. to cure the same to form an adherent, hard and glossy coating, said in-mold coating composition comprising

(a) an ethylenically unsaturated polyester having an average molecular weight of from about 1,000 to 4,500 and

(b) at least one ethylenically unsaturated monomer having from one to four polymerizable unsaturated carbon-to-carbon double bonds, said monomer being present in an amount sufficient to copolymerize with and crosslink said unsaturated polyester to form a hard, adherent, glossy and thermoset coating, in admixture with

(c) an organic free radical peroxide initiator in an amount of from about 1.5 to 6% by weight based on the weight of the unsaturated polyester and the unsaturated monomer and

(d) an accelerator for said peroxide initiator in an amount not in excess of about 1.0% by weight based on the weight of the unsaturated polyester and the unsaturated monomer.

6. The product produced by the method of claim 1.

4,239,797

NON-SKID FLOOR TILE

Peter R. Sachs, New Windsor, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 946,943
Int. Cl.³ B32B 5/16, 19/04
U.S. Cl. 428—327 **12 Claims**

1. Non-skid vinyl floor tile having embedded in the surface of the tile base thereof between about 1 and about 5 grams per sq. ft. of tile base surface of particulate thermoplastic material in the size range between about 1/32 inch and about 3/32 inch, said particulate material having a hardness of not more than about Rockewell M-100 and a Taber abrasion weight loss of not more than about 75 mg per 1000 cycles using CS-17 wheels and 1000 gram weights wherein said particulate material protrudes from the surface of the tile.

7. Process for making non-skid vinyl floor tile which comprises:

a. First forming a vinyl tile base;

b. then distributing on the tile base between about 1 and about 5 grams per sq. ft. of tile base surface of particulate thermoplastic material in the size range between about 1/32 and about 3/32 inch, said particulate material having a hardness of not more than about Rockwell M-100 and a Taber abrasion weight loss of not more than about 75 mg per 1000 cycles using CS-17 wheels and 1000 gram weights; and

c. then pressing the particulate material into the surface of the tile so that said particulate material protrudes from the surface of the tile.

4,239,798

ABRASION RESISTANT SILICONE COATED POLYCARBONATE ARTICLE

Siegfried H. Schroeter, Schenectady, and Daniel R. Olson, Clifton Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 1, 1978, Ser. No. 956,873
The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.
Int. Cl.² G02B 1/10; B32B 27/30, 27/08
U.S. Cl. 428—331 **23 Claims**

1. A shaped non-opaque coated polycarbonate article having improved abrasion and chemical solvent resistance comprising a polycarbonate substrate having disposed on at least one surface thereof (i) an adhesion promoting primer layer consisting essentially of a thermoplastic acrylic polymer; and (ii) disposed on said primer layer a durably adhered top coat layer consisting essentially of a colloidal silica filled thermoset organopolysiloxane, said thermoset organopolysiloxane being the condensate of a silanol of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 carbon atoms, the vinyl radical, the 3,3,3-trifluoropropyl radical, the gamma-glycidoxypropyl radical and the gamma-methacryloxypropyl radical, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$.

4,239,799

BLENDS OF BUTYL RUBBER AND POLYMERS OF VINYLIDENE CHLORIDE

Alan S. Weinberg, Greenville, S.C., and Mario Gillio-Tos, Rho, Italy, assignors to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 740,448, Oct. 27, 1976, abandoned.
This application Dec. 9, 1977, Ser. No. 858,938
Int. Cl.³ B32B 27/08; C08L 91/00
U.S. Cl. 428—335 **12 Claims**

1. A film of packaging material formed from a composition of matter consisting essentially of a mixture of

(a) 85 to 99 parts by weight of a vinylidene chloride interpolymer having from about 51 to about 95 parts by weight vinylidene chloride, thermally plasticized by

(b) 1 to 15 parts by weight of butyl rubber, based on 100

parts of composition weight said composition having a substantially unimpaired oxygen permeability as compared to the oxygen permeability of said interpolymer without said butyl rubber, and

(c) an epoxy compound in an amount from about 1 to 5 parts by weight and 2-ethyl hexyldiphenyl phosphate in an amount up to about 10 parts by weight, said vinylidene chloride interpolymer being present in an amount such that the total amount of the recited components is 100 parts by weight.

5. The film of claim 1 wherein the thickness of the film is from about 1 to about 2 mils and the oxygen permeability is from about 25 to about 60 cc. at 73° F.

4,239,800

GLASS FIBER COATING COMPOSITION

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 604,367, Aug. 13, 1975, abandoned, which is a continuation-in-part of Ser. No. 535,389, Dec. 23, 1974, abandoned. This application Jan. 31, 1979, Ser. No. 7,859

Int. Cl.[2] B29H *9/10, 9/04*

U.S. Cl. 428—374 **16 Claims**

7. A glass fiber tire cord having thereon the dried residue of an aqueous coating composition comprising in parts by weight on a dry solids basis and also the latex on the basis of 100 parts of total elastomer:

10–30 neoprene latex,

70–90 styrene-butadiene-vinyl-pyridine latex,

4–20 resorcinol formaldehyde resin,

2–6 resorcinol,

1–3 formaldehyde, and up to 1.5 hexamethylene tetramine.

4,239,801

SYNTHETIC FIBERS HAVING IMPROVED ANTISTATIC PROPERTIES

Robert B. Login, Middletown, Pa., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 859,359, Dec. 12, 1977, abandoned, which is a division of Ser. No. 739,497, Nov. 8, 1976, Pat. No. 4,080,315. This application Mar. 5, 1979, Ser. No. 17,184

Int. Cl.[2] D02G *3/00*

U.S. Cl. 428—364 **6 Claims**

1. A synthetic polymeric fiber having incorporated therein about 1 to about 15 percent by weight of a polyester antistatic agent prepared by reacting an N,N-bis(hydroxyalkyl) taurine metal salt with an organic polycarboxylic acid reactant.

4,239,802

ANAEROBIC RESIN CURING SYSTEM

James D. B. Smith, Wilkins Township, Allegheny County, and Robert N. Kauffman, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 672,895, Apr. 2, 1976, abandoned. This application Jan. 29, 1979, Ser. No. 7,051

Int. Cl.[3] B05D *5/12*

U.S. Cl. 428—377 **28 Claims**

1. An article comprising a conductor covered with insulation which is impregnated with a cured anaerobic resin.

9. A method of forming a cured, resinous coating on an article comprising applying an anaerobic resin to said article in the presence of oxygen, and placing said article in a gaseous atmosphere which does not contain oxygen.

16. A method of continuously insulating wire comprising passing said wire through an anaerobic resin, thence through a gaseous atmosphere which does not contain oxygen.

4,239,803

ETHYLENE POLYMER COMPOSITION

Toshio Ohzeki, Urawa; Mitsuo Akutsu, Tokyo; Yutaka Nakahara, Iwatsuki; Tohru Haruna, Okegawa; Motonobu Minagawa, Koshigawa, and Masahiro Nonoyama, Shiraoka, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

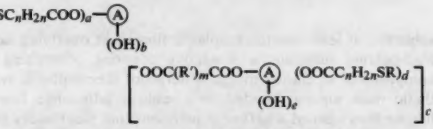
Filed Jun. 14, 1977, Ser. No. 806,511

Claims priority, application Japan, Jun. 17, 1976, 51-71427

Int. Cl.[3] C07C *153/09*

U.S. Cl. 428—379 **18 Claims**

1. An ester of an alkylthioalkylenecarboxylic acid with a polycarbocyclic polyhydric phenol having the formula:



in which R is an alkyl group having from 1 to 32 carbon atoms, A is a residue of a polycarbocyclic phenol having 2 to 4 benzene rings each substituted with one phenolic hydroxyl group and connected through oxygen, sulfur, $—CH_2S—CH_2—$, or saturated aliphatic hydrocarbon cycloaliphatic hydrocarbon, or hydroxyaryl-substituted aliphatic hydrocarbon groups, R' is an alkylene, phenylene, alkenylene, alkylenethioalkylene, alkylenedithioalkylene, or alkylenethioalkylenethioalkylene group having up to 12 carbon atoms, m is 0 or 1, n is an integer from 1 to 5, a is an integer from 1 to 4, b, c, d, and e are integers from 0 to 3, provided that the sum of a, b, and c is an integer from 2 to 4, and when c is not zero, the sum of d and e is an integer from 1 to 3.

10. A composition capable of enhancing the tensile strength of an ethylene polymer upon heating at 150° C. comprising (A) at least one organic peroxide or organic azo compound initiator of cross-linking having a half-life measured at 110° C. in the range from 0.1 to 100 hours and (B) at least one ester according to claim 1, in which the portions of (A) to (B) range from 100 to 1 to 1 to 2.

15. An ethylene polymer composition having, as a result of cross-linking in the presence of at least one organic peroxide or organic azo compound initiator of cross-linking having a half-life measured at 110° C. in the range from 0.1 to 100 hours, a tensile strength of at least 130 kg/cm^2, comprising an ethylene polymer which is low density polyethylene, high density polyethylene, or a copolymer of at least 75% ethylene with not more than 25% of at least one co-monomer which is propylene, 1-butene, 1-hexene, vinyl acetate, or ethylene acrylate, and from 0.01 to 2% of an ester according to claim 1.

18. An ethylene polymer composition according to claim 15 in the form of insulation on a conductor of electricity.

4,239,804

METHOD FOR TREATING METAL ARTICLES FOR RUST CORROSION PROTECTION AND ARTICLE PRODUCED THEREBY

Lewis L. Van Kuiken, Jr., Grand Rapids, Mich., assignor to Progressive Blasting Systems, Grand Rapids, Mich.

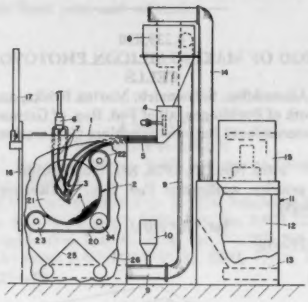
Filed Mar. 5, 1979, Ser. No. 17,416

Int. Cl.[3] B32B *15/04*

U.S. Cl. 428—409 **14 Claims**

1. A method for treating an article constructed of a normally corrosive metal for the purpose of improving the anticorrosive

characteristics thereof comprising the steps of dry blasting the surfaces of said article with propelled glass beads to compressibly peen the surfaces thereof without the glass beads adhering thereto, and thereafter applying a protective coating to said peened surfaces.



12. An article specifically treated for the purpose of corrosion protection comprising a substrate having a surface constructed of a normally corrosive metallic material, such surface having been compressibly peened by blasts of glass beads without the beads adhering to the said surface; and a corrosion protective surface finish on said surface.

4,239,805

METHOD OF DEPOSITING A LAYER OF MAGNETIC BUBBLE DOMAIN MATERIAL ON A MONOCRYSTALLINE SUBSTRATE

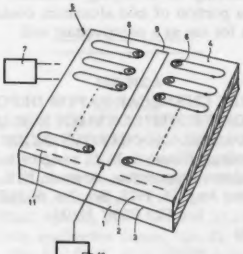
Herman D. Jonker, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,678

Claims priority, application Netherlands, Dec. 13, 1977, 7713759

Int. Cl.³ B32B *9/04*; H01F *10/02*

U.S. Cl. 428—446 **4 Claims**



1. A method of depositing an epitaxial layer of a magnetic bubble domain material of rare earth-iron garnet on a monocrystalline substrate, in which method a quantity of starting material is heated so as to form a uniform melt, then cooled to a supersaturated condition at a temperature substantially equal to a temperature T_g, and after which the substrate is contacted with the melt until an epitaxial layer of the desired thickness has been deposited on the substrate, wherein a starting material is chosen which provides an epitaxial layer represented by an atomic formula in which the iron ions are partly substituted by two types of non-magnetic ions, one type, if substituted alone, would give rise to a material with

$$(d/dT_g)\ 4\pi M_s < 0,$$

the other type, if substituted alone, would give rise to a material with

$$(d/dT_g)\ 4\pi M_s > 0,$$

the atomic ratio between the quantities of the two types of non-magnetic ions being chosen such that at T_g

$$1/H_o\ (d/dT_g)\ H_o \text{ is zero or substantially zero,}$$

wherein

$4\pi M_s$ is the saturation magnetization of the material, and

H_o is the bubble domain collapse field.

4. A magnetic bubble domain layer on a substrate comprising a layer of magnetic bubble domain material of rare earth-iron garnet deposited epitaxially on a monocrystalline substrate while using the method of claim 1, 2 or 3.

4,239,806

LAMINATES

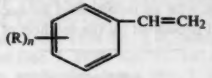
Henry L. Hsieh, and Floyd E. Naylor, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 813,583, Jul. 7, 1977, Pat. No. 4,178,275, which is a division of Ser. No. 636,488, Dec. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 141,996, May 10, 1971, abandoned. This application Apr. 16, 1979, Ser. No. 30,483

Int. Cl.³ B32B *15/08, 27/04*

U.S. Cl. 428—462 **19 Claims**

1. A plurality of layers having between adjacent surfaces thereof as a bonding material therefor an adhesive composition comprising as the rubbery component a radial block copolymer produced by the polymerization of a conjugated diene, styrene, and a hydrocarbyl-substituted styrene of the formula



in which R is a hydrocarbyl radical containing 1 to 12 carbon atoms selected from the group consisting of alkyl, cycloalkyl, aryl, alkenyl, cycloalkenyl, and combinations thereof and n is an integer having a value within the range of 1 to 5, said block copolymer having an inherent viscosity within the range of from about 0.5 to about 3, said conjugated diene containing 4 to 12 carbon atoms per molecule, the weight ratio of conjugated diene to the total weight of said styrene and hydrocarbyl-substituted styrene being within the range of from about 50 to 50 to about 90 to 10, and the ratio of said hydrocarbyl-substituted styrene to the total of said conjugated diene, styrene, and hydrocarbyl-substituted styrene being within the range of from about 1 to about 20 parts by weight of said hydrocarbyl-substituted styrene per 100 parts by weight of the total of said conjugated diene, styrene, and hydrocarbyl-substituted styrene and further wherein said rubbery block copolymer can be represented by the general formula $(A—B)_xZ$ wherein A is a resinous (nonrubbery) polymer block and B is a rubbery polymer block and wherein Z represents the residue from a coupling agent which is capable of coupling two or more (A—B—) polymer blocks together and wherein x represents the number of (A—B—) polymer blocks thus coupled and is greater than two.

4,239,807

POLYAMIDE COATED BASE MATERIAL HAVING AN INTERMEDIATE LAYER OF POLYBUTADIENE

Rainer Feldmann, Marl, and Klaus Gorke, Haltern-Lavesum, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,581
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825707
Int. Cl.³ B05D 3/02
U.S. Cl. 428—462 11 Claims

1. A method of coating a base material with a polyamide coating comprising:

applying to said base material an aqueous dispersion containing in a concentration of about 1 to 70% by weight a liquid polybutadiene having a dynamic viscosity from about 70 to 30,000 millipascal seconds and having a configuration of 40 to 95% of cis-1,4-polybutadiene, 0 to 30% of trans-1,4-polybutadiene, 1 to 60% of 1,2-polybutadiene and, referred to the total polybutadiene, 0.5 to 10% by weight of an emulsifier;

drying said liquid polybutadiene to form an intermediate layer; and

applying polyamide powder to said intermediate layer with sintering to form a polyamide coated base material.

4,239,808

IN-MOLD COATING OF SHEET MOLDING COMPOUND MOLDINGS

Sigurdur I. Arnason, Fenwick, Mich., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 814,502, Jul. 11, 1977, abandoned. This application Jun. 13, 1979, Ser. No. 48,305
Int. Cl.³ B29C 5/00
U.S. Cl. 428—482 3 Claims

1. In a method of coating a rigid automotive part made from sheet moulding compound, after the part is formed between two mold halves and cured, by the injection of the coating composition into a space formed by separating one of the mold halves from the part while maintaining the mold in a sealed condition and then curing the coating composition, the improvement characterized by the coating composition consisting essentially of vinyl ester resin formed by the reaction of a polyepoxide resin with an unsaturated monocarboxylic acid.

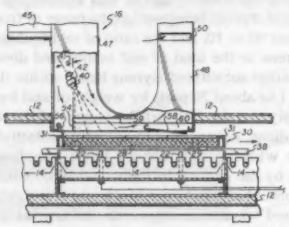
3. The product produced by the method of claim 1.

4,239,809

METHOD FOR QUALITY FILM FORMATION

Curtis M. Lampkin; Guy A. Roderick, and Robert B. Nikodem, all of El Paso, Tex., assignors to Photon Power, Inc., El Paso, Tex.

Filed Mar. 15, 1978, Ser. No. 886,891
Int. Cl.² B05D 5/12
U.S. Cl. 427—74 11 Claims



1. A method of forming a photovoltaic cell, comprising:

forming a spray composed substantially of a film-forming material,

selecting a portion of said spray having preferred characteristics,

selecting a portion of the surface of a glass substrate, and

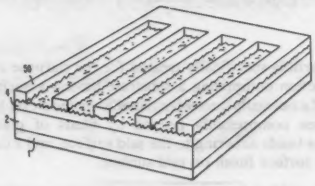
controlling deposition of said selected portion of said spray to substantially said selected portion of the surface of said substrate.

4,239,810

METHOD OF MAKING SILICON PHOTOVOLTAIC CELLS

Oussama Alameddine, Schoenaich; Marian Briska, and Klaus P. Thiel, both of Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,540
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754652
Int. Cl.³ H01L 31/18
U.S. Cl. 427—75 13 Claims



1. A method of making silicon solar cells and other silicon photovoltaic cells and comprising the steps of

forming a silicon element having a metallic electrode coating on one surface of said element,

applying to the other surface of said element a coating comprising aluminum and silicon,

heating said coated element at a temperature below the eutectic temperature of aluminum-silicon to form an anti-reflective coating of a fine matrix of silicon pyramids doped with aluminum,

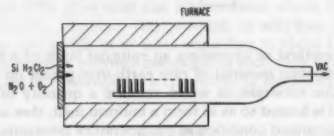
said matrix having an overlying aluminum coating, and removing a portion of said aluminum coating to expose said matrix for use as a photovoltaic cell.

4,239,811

LOW PRESSURE CHEMICAL VAPOR DEPOSITION OF SILICON DIOXIDE WITH OXYGEN ENHANCEMENT OF THE CHLOROSILANE-NITROUS OXIDE REACTION

Bernard M. Kemlage, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1979, Ser. No. 66,965
Int. Cl.³ C23C 11/00
U.S. Cl. 427—95 10 Claims



1. A method for forming a silicon dioxide layer on a semiconductor substrate in a furnace heated reaction zone of a chemical vapor deposition reactor having an input end for gaseous reactants wherein the said layer is not subject to degradation during subsequent oxidation cycles comprising:

mixing a gaseous chlorosilane with nitrous oxide gas in the reactor; and

adding oxygen gas between about 0.25% to 10% by volume of total reactive gas mixture to said chlorosilane and nitrous oxide gases in the said reaction zone where the temperature is between about 800° C. to 1200° C. in a pressure of less than about 5 torr to deposit said silicon dioxide layer onto said substrate.

4,239,812

SOLDERING FLUX

Kenneth G. Boynton, Wilton, N.H., assignor to Cooper Industries, Inc., Houston, Tex.

Division of Ser. No. 654,366, Feb. 2, 1976, which is a division of Ser. No. 469,536, May 13, 1974, Pat. No. 3,973,322. This application Jan. 30, 1978, Ser. No. 873,208

Int. Cl.[3] B05D *3/00;* B23K *35/34;* C08L *91/06, 93/04*

U.S. Cl. 427—96 16 Claims

1. A new use for a wax, as a combination cement, and a carrier for a flux active agent, for mass applying to an apertured circuit board prior to mass solder joining electrical and electronic components to said board, comprising the steps of:

(1) providing a wax which: (a) is compatible with said flux active agent and said solder, (b) has a melting point below that of said solder, and (c) is capable of forming a solid matrix in which said components and said board are retained in a fixed relationship;

(2) heating said wax in combination with said flux active agent so as to produce a liquid mixture of said wax and said flux active agent;

(3) applying said resulting liquid mixture onto said circuit board so as to fill said board apertures at least in part; and

(4) hardening said liquid mixture in said apertures.

4,239,813

PROCESS FOR FORMING PRINTED WIRING BY ELECTROLESS DEPOSITION

Kanji Murakami; Mineo Kawamoto; Yoichi Matsuda; Motoyo Wajima, and Hirosada Morishita, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 25, 1979, Ser. No. 33,218

Claims priority, application Japan, Apr. 25, 1978, 53/48331

Int. Cl.[3] C23C *3/02;* H01B *5/14*

U.S. Cl. 427—98 8 Claims

1. A process for forming printed wiring on an insulating substrate by using electroless deposition which comprises

forming an adhesive layer containing a photo-setting substance on the substrate,

exposing the adhesive layer to actinic light imagewisely so as to irradiate only portions other than those forming wiring,

treating the surface of the substrate with a roughening solution so as to roughen the portions not exposed to actinic light,

treating the surface of the substrate with a catalyst solution for activation for electroless deposition,

contacting the surface of the substrate with a stripper for the catalyst, and

conducting electroless deposition so as to form prescribed wiring on the substrate.

4,239,814

METHOD OF PRODUCING ELECTRICALLY INSULATING, HIGHLY FLEXIBLE AND/OR SOLDERABLE COATINGS

Klaus Nagel, Wuppertal, Fed. Rep. of Germany, assignor to Herberts Gesellschaft mit beschrankter Haftung, Wuppertal, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,650

Claims priority, application Austria, Sep. 19, 1977, 126699/77

Int. Cl.[3] B05D *3/02, 7/20;* H01B *3/42*

U.S. Cl. 427—120 10 Claims

6. A solution for the production of electrically insulating highly flexible and/or solderable coatings on electric conductors or fibre materials, said solution comprising:

(i) isocyanates masked with compunds having reactive hydrogen atoms in the molecule and selected from the group consisting of acid amides having 1 to 2 amide hydrogen atoms, hydroxylamine, reaction products of hydroxylamine with carbonyl compounds, imines having an imine hydrogen atom, and lactams with melting or sublimation points below 25° C.;

(ii) polyester resins and modified polyester resins selected from the group consisting of imide-modified polyester resins, amide-modified polyester resins and, mixtures thereof, said polyester resins and modified polyester resins having a content of terminal hydroxyl groups of from 1 to 16% by weight and being derived from compounds selected from the group consisting of polyhydric alcohols, aliphatic carboxylic acids, polybasic carboxylic acids having carboxyl groups bonded to an aromatic ring, and amino group containing compounds; and

(iii) solvents having from 1 to 10 carbon atoms, a boiling point of at most 250° C. and being selected from the group consisting of araliphatic ketones, aliphatic ketones, araliphatic alcohols, aliphatic alcohols, ether oxygen-containing araliphatic alcohols, ether oxygen-containing aliphatic alcohols, araliphatic ketoalcohols, esterified aliphatic alcohols, and esterified araliphatic alcohols.

4,239,815

METHOD OF PRODUCING RECORDING SHEETS

Hajime Kato, and Yasuhiro Ogata, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Dec. 7, 1978, Ser. No. 967,460

Claims priority, application Japan, Dec. 7, 1977, 52-146877

Int. Cl.[3] B41M *3/12*

U.S. Cl. 427—150 12 Claims

1. A method of producing a recording sheet which comprises coating a support first with a coating composition containing a water-soluble polyvalent metal salt and then with a coating composition containing an alkali metal salt or ammonium salt of an aromatic carboxylic acid.

4,239,816

ORGANIC ADDITIVES FOR ORGANOMETALLIC COMPOSITIONS

J. Shannon Breininger, Gibsonia, and Charles B. Greenberg, Murrysville, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 1, 1978, Ser. No. 965,663

Int. Cl.[3] B05D *1/02, 3/02, 5/06;* C01C *17/25*

U.S. Cl. 427—168 7 Claims

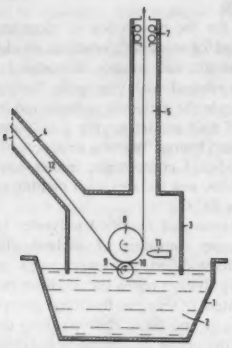
1. In a method for forming metal oxide films by contacting a hot surface with a coating composition comprising an organometallic coating reactant which thermally decomposes to a metal oxide, the improvement which comprises adding to said coating composition a relatively nontoxic organic compound having a boiling point of at least 200° C.

4,239,817

PROCESS AND APPARATUS FOR COATING ONE SIDE OF A METAL STRIP WITH MOLTEN METAL

Joachim Koenitzer; Heinrich Schmitz, both of Dinslaken, and Kurt Jindra, Voerde, all of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hütte, Duisburg, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 33,898
Int. Cl.³ C23C *1/16*
U.S. Cl. 427—211 **11 Claims**



1. A process for coating one side of a metal strip with a molten metal from a melting bath, comprising the steps of

continuously conveying a previously cleaned and heated metal strip through a protective gas atmosphere partially around a supporting roller and above the level of the melting bath of the molten metal for bringing the metal strip into contact with the molten metal,

supporting the metal strip on a rear or reverse side thereof on the supporting roller in the area of contact with the molten metal, and

conveying the molten metal from the melting bath towards the supported area of the strip with a scoop roller immersed in the melting bath by more than half its surface area but only by part, which scoop roller together with the supporting roller forms an adjustable slot for the passage therebetween of the metal strip.

4,239,818

PROCESS AND MATERIAL FOR TREATING STEEL WALLS AND FANS IN ELECTRICAL PRECIPITATION INSTALLATIONS WITH MICRON COLLOIDAL GRAPHITE PARTICLES

Michael D. LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117

Continuation-in-part of Ser. No. 956,497, Nov. 1, 1978, Pat. No. 4,187,334. This application Jul. 20, 1979, Ser. No. 59,303
Int. Cl.³ B05D *7/22, 3/02, 3/00, 3/12*
U.S. Cl. 427—236 **5 Claims**

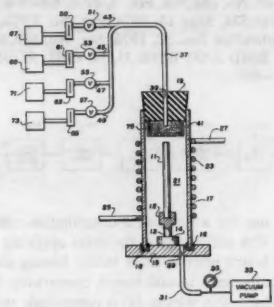
1. A process of treating the inner steel walls and fluid handling and moving devices in electrical precipitation installations that consists essentially of the steps of cleaning said steel walls and devices, penetrating a liquid suspension of micro micron particles of graphite into said cleaned steel walls and devices so as to build up a smooth adhering and lubricating coating on said steel walls and devices, said suspension including substantially between about 5% to 25% micro micron particles of graphite by weight, between about 34% to 75% by weight of a solution of water and sodium silicate, with the sodium silicate present at about 40% of the solution, between about 2% to 10% by weight concentrated hydrochloric acid, between about 33% and 75% by weight of a solution of water and carboxy vinyl polymer resin wherein the resin is present in amounts between about 1% to 10% of the solution and between about 15% to 20% by weight water and drying said coating to form a slick smooth surface.

4,239,819

DEPOSITION METHOD AND PRODUCTS

Robert A. Holzl, La Canada, Calif., assignor to Chemetal Corporation, Pacoima, Calif.

Continuation-in-part of Ser. No. 797,059, May 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 588,390, Jun. 18, 1975, Pat. No. 4,040,870, which is a continuation-in-part of Ser. No. 358,110, May 7, 1973, abandoned. This application Dec. 11, 1978, Ser. No. 968,074
Int. Cl.³ C23C *11/08*
U.S. Cl. 427—255.2 **29 Claims**



1. A method for depositing a hard, fine grained alloy onto a substrate, comprising providing a volatile, gaseous halide of a metal or semi-metal, partially reducing the volatile halide in a first reaction zone by a gaseous reducing agent or particulate metal or semi-metal which is the same as the metal or semi-metal of the volatile halide to be reduced, said first reaction zone having a first pressure and separated from the surface of said substrate, flowing said partially reduced halide into a second reaction zone maintained at a pressure lower than the pressure in said first reaction zone and containing said substrate, providing a gaseous alloying agent in said second reaction zone, and depositing a liquid phase intermediate compound onto a substrate within said second reaction zone, and thermochemically reacting the liquid phase on the substrate to produce the fine grained alloy.

27. A hard metal alloy produced from a volatile halide of a metal partially reduced to form a liquid compound containing said alloy which is deposited onto a substrate and thermochemically reacted to produce said alloy, said alloy comprised of a metal selected from the class consisting of aluminum, hafnium, columbium, zirconium and tantalum, and an alloying element selected from the class consisting of nitrogen, boron, carbon and silicon, said alloy being free of columnar crystals and having a crystal structure consisting of fine and substantially equiaxial grains less than about 1 micron in diameter.

4,239,820

METHOD FOR CREATING A SIMULATED STONE SURFACE OR THE LIKE

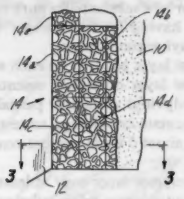
Silvano E. Salvador, 20490 Melvin, Livonia, Mich. 48152

Continuation of Ser. No. 702,505, Jul. 6, 1976, abandoned. This application Feb. 6, 1978, Ser. No. 875,531
Int. Cl.³ B05D *1/32, 3/12, 5/00*
U.S. Cl. 427—272 **1 Claim**

1. The method of creating a simulated stone surface or the like on a surface area which comprises the steps of:

(a) preparing first and second rectangular patterns, each pattern having one adhesive side and having a series of interconnected mortar line simulating strip portions extending in a plurality of directions with open areas there-

between, said step of preparing including (i) partially die cutting sheet material to the desired pattern configuration while leaving the die-cut portions in place, (ii) coating the sheet material with said adhesive, and (iii) removing and discarding the die-cut portions of the sheet material other than the interconnected mortar line strip portions, each of said patterns having a plurality of the strip portions terminating with uniform widths at the edges of the rectangular pattern at each of a plurality of preselected locations, the distance between two adjacent ones of said locations along a first edge of said rectangular pattern differing substantially from the distance between at least two other adjacent ones of said locations along said first edge of said rectangular pattern, said locations along said first edge of said rectangular pattern having locations and spacings along said first edge from an edge perpendicular to said



first edge the same as the locations and spacings along a second edge of said rectangular pattern parallel with said first edge, so that the unifrom width terminations of the strip portions along said first or second edges of each pattern are aligned into abutting mating relationship when the first or second edge of the first pattern abutts the first or second edge of the second pattern;

(b) adhering said first and second patterns in said mateable abutting relationship to the surface area by means of their respectiive adhesive sides; applying a plastic settable composition to the surface area overlying

(c) at least the open areas of the first and second patterns; and

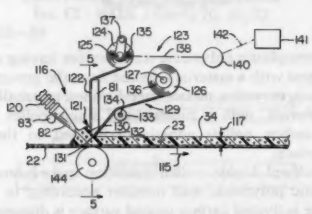
(d) thereafter removing the first and second patterns from the surface area together with any of the composition overlying said mortar line strip portions.

4,239,821

APPARATUS FOR AND METHOD OF COATING A WEAR LAYER OF A CARPETING STRIP WITH CURABLE LATEX FOAM

Michael E. McLean; Rufus N. Ensley, both of Waynesville; Doyle V. Haren, Clyde, all of N.C., and Anthony J. Alcaraz, Petersburg, Va., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 10, 1979, Ser. No. 28,784
Int. Cl.³ B32B *3/00*; B05D *3/12, 3/02*; B05C *3/02*
U.S. Cl. 427—358 **20 Claims**



15. In a method of continuously making carpeting strip comprising; continuously moving a wear layer having a bottom surface in a rectilinear path; continuously coating said bottom surface with a thickness of latex foam during continuous movement of said wear layer; and continuously coating step comprising supporting a coating knife in spaced relation at a fixed position above said bottom surface to define a controlled thickness of said latex foam and continuously providing said latex foam through a nozzle upstream of said knife during continuous movement of said wear layer; and curing said latex foam to define a compressible backing material for said wear layer of said carpeting strip; the improvement in said method wherein said continuously coating step comprises replacing a foam engaging portion of said knife while continuously using said knife to define said controlled thickness of foam.

4,239,822

PROPYLENE/POLYSTYRENE COMPOSITION AND METHOD FOR COATING

Theodore L. McGee, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 836,835, Sep. 26, 1977, Pat. No. 4,183,845.
This application Jun. 22, 1979, Ser. No. 51,070
Int. Cl.³ B05D *3/12*
U.S. Cl. 427—358 **5 Claims**

1. A process of coating a substrate with an extruded film of a polymer blend comprising:

providing a blend of polystyrene and a polypropylene having a melt flow rate, as determined by ASTM-1238-G, within the range of about 30 to about 40 grams per ten minutes, the ratio of polypropylene to polystyrene in the blend being within the range of about 5:1 to 2:1;

extruding said polymer blend without substantial degradation at a melt temperature of about 475° F. to about 575° F. to contact said substrate;

passing said coated substrate to contact a chill roll maintained at a temperature of about 120°–200° F. to form an adhered layer of said extruded polymer blend on said substrate.

4,239,823

AUTOMOBILE SOUND INSULATING PANEL AND METHOD OF MAKING SAME

Anthony J. Alcaraz, Petersburg; Christopher W. Chandler, Sandston; Thomas G. Edmundson, Midlothian, all of Va., and James P. Nolan, deceased, late of Chester, Va. (by Evelyn L. Nolan, executrix), assignors to Dayco Corporation, Dayton, Ohio

Filed Feb. 21, 1979, Ser. No. 13,651
Int. Cl.³ B05D *1/30*
U.S. Cl. 427—420 **8 Claims**

1. In a method of making a sound insulating panel for an automobile and comprising the steps of, forming a contoured fibrous pad, coating said pad with a liquid plastisol layer, and curing said plastisol layer, the improvement wherein said coating step comprises the steps of continuously moving said pad on a conveyor having openings therein, disposing an open top elongate trough vertically above said conveyor and pad, and flowing entirely by gravity a solid curtain of liquid foamed plastisol from said trough against at least one surface of said pad while continuously moving said pad thereunder, said curtain extending across one full dimension of said pad while moving said pad at a constant speed through said curtain, said liquid foamed plastisol upon curing thereof defining a foamed plastisol layer bonded against said pad, said layer having randomly disposed air pockets throughout which serve to reduce the overall weight of said panel while improving the acoustical properties thereof.

4,239,824

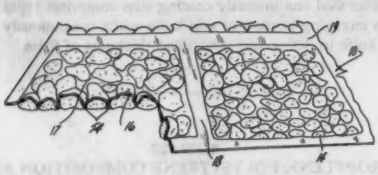
LANDSCAPE BLANKET

Walter Kasten, Franklin, Mich., assignor to X Incorporated, Franklin, Mich.

Division of Ser. No. 847,399, Oct. 31, 1977, Pat. No. 4,154,637, which is a continuation-in-part of Ser. No. 747,979, Dec. 6, 1976, abandoned. This application Dec. 4, 1978, Ser. No. 965,948

Int. Cl.[2] B44F 7/00

U.S. Cl. 428—13 10 Claims



1. A landscape blanket for covering the ground comprising; particles of stone material of irregular size arranged in a single, random layer in contacting relation to each other and to form irregular surfaces at opposite sides of said layer, a pair of thin and transparent sheets of flexible resin film of substantially uniform thickness disposed on and contacting opposite sides of said layer of particles and conforming to and being bonded to a substantial surface portion at opposite sides of said layer to encapsulate and hold said stone particles in flexible adjacent relationship to each other, said sheets of resin forming irregular finished surfaces at opposite sides of said blanket.

4,239,825

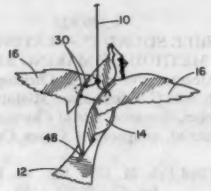
BIRD ORNAMENT

William P. Kaulfuss, Wilmette, and Robert H. Kaulfuss, Northbrook, both of Ill., assignors to Kaulfuss Designers Incorporated, Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,354

Int. Cl.[2] A63H 33/16; G09F 1/08

U.S. Cl. 428—16 4 Claims



1. A manually assembled bird ornament comprising:

a paper blank having a specie of bird printed thereon, said blank having a pair of body portions, a pair of wing portions and a tail portion, each of said portions being defined by a crease line in the blank, said body portions being intermediate said wing portions and said tail portion and carrying integral locking tabs thereon, said tail portion having a slot therein adapted to receive said tabs to accurately depict the bird in a lifelike position when the body portions are manually folded along a pair of said crease lines to positions wherein said body portions are substantially parallel to each other, said wing portions being folded outwardly and substantially perpendicular to said body portions when the body portions are brought into parallelism, and means carried on said body portions for suspending the ornament in said lifelike position from a fixture.

4,239,826

MULTI-LAYER BARRIER FILM

Jack E. Knott, II, Menasha, and James C. Wang, Appleton, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Dec. 28, 1978, Ser. No. 973,925

Int. Cl.[3] B32B 9/04, 27/08

U.S. Cl. 428—35 26 Claims

1. A delamination resistant multi-layer structure comprising a barrier layer of a substantially pure polymer or copolymer of vinyl alcohol having less than about 1.5 mole percent remaining vinyl acetate groups and an adjacent adherent layer consisting essentially of a partially hydrolyzed vinyl acetate polymer or copolymer which has at least about 5 mole percent remaining vinyl acetate groups.

17. A delamination resistant coextruded multi-layer structure comprising

(a) a core layer of a substantially pure ethylene vinyl alcohol copolymer having less than about 1.5 mole percent remaining vinyl acetate groups;

(b) an adherent layer adhered on each side of the core layer, the adherent layer consisting essentially of partially hydrolyzed polyvinyl acetate or partially hydrolyzed ethylene-vinyl acetate copolymer, to result in a polymer having at least about 5 mole percent remaining vinyl acetate groups;

(c) an outer polymer layer over at least one of the adherent layers, the outer layers being independently selected from the group which consists of polyethylene, polypropylene, ethylene vinyl acetate copolymer, ethylene acrylic acid copolymer, blends of two or more of the foregoing polymers, nylon, and ionomers.

4,239,827

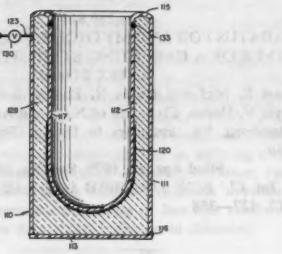
FLAME-SPRAYED THERMOPLASTIC SUBSTRATE IS COATED WITH AN ADHESIVE LAYER WHICH BONDS PARTICLES OF AN ADSORBENT LIKE CARBON TO THE SUBSTRATE

Frank Notaro, Amherst, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,601

Int. Cl.[3] B05D 1/08, 1/10; B65D 11/16, 11/20, 85/70

U.S. Cl. 428—35 15 Claims



1. A thermoplastic polymeric wall member having a surface flame-sprayed with a material selected from the group consisting of carbon, ceramics, metals, metal oxides, metal alloys, and mixtures thereof, with a substantially single pellet layer of activated carbon pellets adhesively bonded to the flame-sprayed surface.

2. An enclosed double-walled insulation space bounded by a thermoplastic polymeric wall member according to claim 1, wherein the activated carbon-coated surface is disposed interiorly in the insulation space.

3. A method of forming a particulate coating on a thermoplastic polymeric surface, comprising the steps of:

(a) flame spraying said thermoplastic polymeric surface with

a material having a surface free energy which is greater than that of said thermoplastic polymeric surface;

(b) applying adhesive to the flame-sprayed thermoplastic polymeric surface; and

(c) applying a particulate material to the adhesive-applied, flame-sprayed thermoplastic polymeric surface, whereby said particulate material is adhesively bonded to the flame-sprayed surface to form said particulate coating thereon.

4,239,828

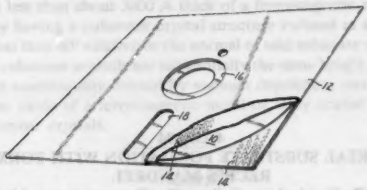
SELF-LUBRICATING MAGNETIC RECORDING DISKETTE

Constance J. Knope, Roseville, and Kent A. Kirkevold, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 512,474, Oct. 7, 1974, abandoned. This application Mar. 29, 1976, Ser. No. 671,573

Int. Cl.[2] B32B *3/02*

U.S. Cl. 428—64 **9 Claims**



1. Method of extending the useful life of a flexible magnetic recording disk which is contained in an envelope to which a wiping fabric is attached in facing relationship to the disk comprising the steps of

(1) applying to the wiping fabric a dilute solution of a lubricant primarily comprising a highly fluorinated alkyl polyether having a viscosity index as herein defined of about 10–130, and

(2) evaporating the solvent to provide about 1–20 parts by weight of the lubricant per 100 parts by weight of the fabric.

4. A diskette comprising an envelope containing a flexible magnetic recording disk and a tissue-like wiping fabric attached to the envelope in facing relationship to the disk, characterized by the fact that

the fabric is impregnated with a lubricant primarily comprising a highly fluorinated alkyl polyether having a viscosity index as herein defined of about 10–130, there being about 1–20 parts by weight of the polyether per 100 parts by weight of the fabric.

4,239,829

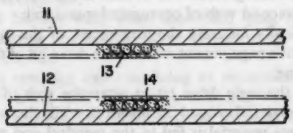
ADHESIVE BONDING OF HOOK AND LOOP TYPE FABRIC SURFACES

Howard S. Cohen, 2001 Lincoln St., Berkeley, Calif. 94709

Filed Feb. 4, 1980, Ser. No. 118,456

Int. Cl.[3] B32B *3/06, 7/10, 31/12*

U.S. Cl. 428—86 **4 Claims**



1. A method for permanently bonding two objects, comprising the steps of securing a hook fabric portion to one of said objects, securing a loop fabric portion to the other of said objects, said hook and loop portions being adapted for mutual engagement and retention upon impingement, applying a resin compound to one of said portions, applying a resin catalyst to the other of said portions, bringing said objects together to impinge said hook and loop portions and intermix said resin and catalyst, said hook and loop portions mutually engaging to retain said objects together while said resin and catalyst react, thereafter curing said resin and catalyst to form a hardened, fiber reinforced resin bond between said portions.

3. A construction for joining permanently two objects, comprising a first member joined to a first object and including a hook fabric portion extending outwardly therefrom, a second member joined to a second object and including a loop fabric portion extending outwardly therefrom, said hook fabric portion engaging said loop fabric portion, and an adhesive compound layer in which said hook and loop fabric portions are embedded, said adhesive compound joining permanently said first and second members.

4,239,830

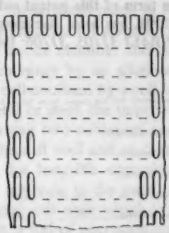
WEBBED PLASTIC TUBING

Harry Ball, 116 Wyckoff Ave., Piscataway, N.J. 08854

Filed Mar. 29, 1979, Ser. No. 24,961

Int. Cl.[3] B29C *17/14*

U.S. Cl. 428—136 **7 Claims**



1. A method for making non-woven webbed plastic tubing, comprising the steps of:

forming a tubular member by extruding a thermoplastic polymer onto the smaller diameter end of an elongated cylindrical shaft having a larger diameter other end constituting a mandrel, with a frustoconical transition portion between said ends;

cooling the extruded tubular member to a temperature at which the polymer is still warm and plastic;

cutting a plurality of slits in the cooled tubular member by reciprocating against said smaller diameter end of said shaft adjacent said transition portion, a plurality of longitudinally oriented knife blades disposed radially of said shaft, to form a corresponding plurality of longitudinally elongated slits in said cooled tubular member; and

moving said cooled slitted tubular member along said shaft, through said transition region and onto said mandrel to enlarge the diameter of said tubular member and increase the size of the slits therein.

7. A product made by the process of one of claims 2, 3, 4, 5, 6 or 1.

4,239,831

PROTECTED LUMBER

Thomas W. E. Pattenden, Mississauga, Canada, assignor to Du Pont Canada, Inc., Montreal, Canada

Filed May 23, 1979, Ser. No. 41,602

Int. Cl.[3] B32B *23/02*

U.S. Cl. 428—193 **11 Claims**

1. A lumber cover having a top panel, two side panels and two end panels, said panels being made of a wrapping material selected from the group consisting of (a) a fabric made from woven oriented tapes of polyethylene, said fabric being coated

with a layer of polyethylene at least about 15 μm in thickness containing a particulate metallic filler selected from the group consisting of aluminum, brass and bronze, in an amount sufficient to provide a light transmittance through the wrapping material in the 450 to 700 nm wavelength range of less than about 30%, and (b) a fabric made from woven oriented tapes of polypropylene, said fabric being coated with a layer of polypropylene at least about 15 μm in thickness containing a particulate metallic filler selected from the group consisting of aluminum, brass and bronze, in an amount sufficient to provide a light transmittance through the wrapping material in the 450 to 700 nm wavelength range of less than about 30%, said panels being of a size such that the cover substantially conforms to a rectangular prismoidal stack of lumber.

4,239,832

ADHESIVELY CORRECTABLE TRANSFER MEDIUM WITH DELAYED ALTERATION RESISTANCE CHARACTERISTICS

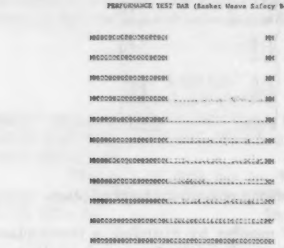
Victor Barouh, Old Westbury; George Rottmann, Jackson Heights, and Salvatore DeSimone, Brooklyn, all of N.Y., assignors to Eaton Allen Corp., Brooklyn, N.Y.

Division of Ser. No. 817,773, Jul. 21, 1977, which is a continuation-in-part of Ser. No. 781,023, Mar. 24, 1977, Pat. No. 4,161,551. This application Nov. 30, 1978, Ser. No. 965,166

The portion of the term of this patent subsequent to Jul. 17, 1996, has been disclaimed.

Int. Cl.[3] **B41J** *31/05, 31/06;* **B41M** *3/14*

U.S. Cl. 428—539 **4 Claims**



1. In a typewriter ribbon having a thin flexible substratum and an image yielding transfer layer capable of producing indicia which, in connection with typing bond, are initially adhesively removable and exhibit a delayed alteration resistance, wherein the improvement comprises said transfer layer including a water soluble salt which reacts with paper, said water soluble salt being selected from the group consisting of cupric chloride, ammonium acetate, calcium thoicyanate, potassium acetate, barium chloride, potassium permanganate, lithium acetate, iodine trichloride and strontium hydroxide.

4,239,833

GRID OF PRECIOUS METALS FOR THE RECOVERY OF PLATINUM METALS ESCAPING FROM A CATALYST DURING THE REACTION, AND ESPECIALLY OF PLATINUM DURING OXIDATION OF AMMONIA

Tadeusz Retmaniak; Mieczyslaw Marek; Pawel Polak; Andrzej Brzeski, all of Warsaw; Janusz Nyc, Ursus, wy; Boleslaw Skowronski, Pulawy; Kazimierz Kozlowski, Pulawy; Antoni Springwald, Pulawy; Henryka Weglarska-Zagorna, Pulawy; Eugeniusz Blasiak, Chorzow; Jerzy Studencki, and Andrzej Skalski, both of Pulawy, all of Poland, assignors to Mennica Panstwowa, Warsaw and Instytut Nawozow Sztucznych, Pulawy, both of, Poland

Filed Dec. 28, 1978, Ser. No. 973,984

Int. Cl.[3] **B22F** *3/00*

U.S. Cl. 428—567 **3 Claims**

1. In a grid of precious metals for the recovery of platinum metals escaping from a catalyst during the reaction, especially of platinum during oxidation of ammonia, wherein the grid contains wires of different thickness in the weave which are made of the known precious metals used for the recovery, the improvements which are characterized in that for pressureless catalytic processes the difference in the thickness of wires in the weave is from 30% to 400%, for medium-pressure catalytic processes the difference in the thickness of the wires is from 60% to 600%, for high-pressure catalytic processes the difference in the thickness of the wires is from 100% to 1000%, and in that the thicker wires in the weave are arranged between every 10 to 200 of the thinner wires.

4,239,834

METAL SUBSTRATE FORMATION WITH TORX RECESS MANDREL

James R. Cunningham, Collegeville, Pa., assignor to Matthey Bishop Incorporated, Malvern, Pa.

Filed Dec. 29, 1978, Ser. No. 974,503

Int. Cl.[3] **B23B** *33/00*

U.S. Cl. 428—592 **9 Claims**

1. A metal substrate comprising an elongated Inconel mandrel having a body and first and second ends; a plurality of wrappings of metal substrate material disposed around said mandrel, and including alternate layers of planar metal foil and corrugated metal foil; means for maintaining said wrappings and mandrel integral; said mandrel having a drilled hole in said first end thereof; and a torx recess formed in said mandrel second end, said second end being headless and having a slight taper from the mandrel body toward the second end.

2. A method of high speed production of metal substrates, utilizing a winding machine, comprising the steps of

providing an elongated mandrel having a body and first and second ends, a drilled hole being provided in the first end of the mandrel, and a torx recess in the second end of the mandrel, with the second end being headless and having a slight taper from the mandrel body toward the second end;

affixing a web of metal substrate material to the mandrel, the web including a first web of substantially planar metal foil and a second web of corrugated metal foil;

automatically indexing the torx recess of the mandrel into operative engagement with a male drive bit of the winding machine;

rotating the male drive bit to wrap the web of metal substrate material around the mandrel, while the web of metal substrate material is fed to the mandrel and while maintaining tension on the web of metal substrate material, until a metal substrate of desired size is obtained; and

cutting the web of metal substrate material, and attaching the cut end thereof to underlying portion of the metal substrate.

4,239,835

MAGNETIC RECORDING MEDIUM

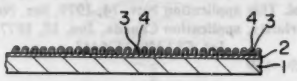
Yasuo Iijima; Koichi Shinohara, both of Kobe; Takashi Fujita; Masaru Odagiri, both of Kawanishi, and Toshiaki Kunieda, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 13, 1977, Ser. No. 815,301

Claims priority, application Japan, Jul. 15, 1976, 51/84829; Sep. 24, 1976, 51/115271; Sep. 28, 1976, 51/116932; Nov. 5, 1976, 51/133378

Int. Cl.[3] H01F *1/06, 1/33*

U.S. Cl. 428—611 9 Claims



1. A thin metal film type magnetic recording medium which comprises a plastic film or non-magnetic metal substrate, a thin film less than about 3000 Å thick of a ferromagnetic metal or alloy having a columnar crystal structure inclined at an angle of less than 60° relative to the normal to said substrate wherein the columnar crystals are substantially the same height, having been continuously formed by vacuum deposition, and a layer of an oxide of a ferromagnetic metal or alloy coated on said columnar crystals.

4,239,836

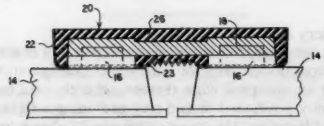
SYSTEM FOR PROTECTING AND SEALING INTERCELL CONNECTING LINKS AND POLES OF INDUSTRIAL BATTERIES

William A. Picciolo, King, N.C., assignor to Douglas Battery Manufacturing Co., Winston-Salem, N.C.

Filed Apr. 16, 1979, Ser. No. 30,110

Int. Cl.[3] H01M *2/34*

U.S. Cl. 429—65 2 Claims



1. In an apparatus for protecting and sealing poles and intercell connecting links of industrial batteries of the type in which a plurality of cells are grouped together and wherein a pole of one cell is connected to a pole of an adjacent cell by means of a connecting link, the improvement in said apparatus which comprises:

(a) a retaining cap including a bottom wall, side wall, and an open top;

(b) said bottom wall including openings therein corresponding in size, shape, and spacing to the poles of adjacent battery cells which are received, when assembled, through the upper ends of the cells and are joined by said connecting link;

(c) said bottom wall, when assembled lying between said connecting link and the upper surface of the corresponding cell; and

(d) said retaining cap containing an encapsulating mixture surrounding said connecting link and substantially the entire exposed cell terminal cover bushing, said encapsulating mixture being a substance having the capabilities of flowing in its uncured state, resealing itself after puncture, remaining stable during exposure to a broad range of temperatures, resisting adherence to styrene and lead, and resisting damage from sulfuric acid.

4,239,837

ELECTROCHEMICAL STORAGE CELL

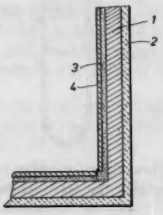
Bernd Hartmann, Sandhausen, and Herbert Kleinschmager, Eppelheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,805

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1978, 2814905

Int. Cl.[2] H01M *10/38*

U.S. Cl. 429—104 16 Claims



1. An electrochemical storage cell or battery with at least one anode chamber for an alkali metal as the anolyte and with at least one cathode chamber for a sulfur-containing catholyte substance, with the anode chamber and the cathode chamber separated from each other by an alkali-ion-conducting solid electrolyte and the cell confined by a cell wall of metal, particularly of a light metal or steel, the improvement comprising a protective layer having two sublayers consisting of an inner sublayer adjacent the cell wall and an outer sublayer adjacent the inner sublayer for long-life corrosion protection of the metal cell wall, by applying to the metal cell wall, at least to that part of the metal cell wall which is in contact with the catholyte substance, a foil of corrosion-resistant material 0.01 to 0.2 mm thick as the outer sublayer by means of a conductive adhesive as the inner sublayer which retains its adhesive properties at operating temperatures of the cell, and a protective layer of corrosion-resistant material applied to the outside of the cell housing in addition to the layer applied to the cell wall on the inside.

4,239,838

ENERGY CONVERSION DEVICE WITH IMPROVED SEAL

Gerald R. Miller, Salt Lake City, and Anil V. Virkar, Midvale, both of Utah, assignors to Ford Motor Company, Dearborn, Mich.

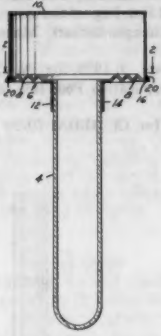
Filed Nov. 5, 1979, Ser. No. 91,284

Int. Cl.[3] H01M *2/00*

U.S. Cl. 429—104 22 Claims

1. In an energy conversion device comprising a cation-permeable casing, which is a barrier to mass liquid transfer, sealed to and supported by one surface of a member, wherein the improvement consists essentially of said sealing member comprising a metal substrate which (i) bears a non-conductive

and corrosion resistant coating on the major surface to which said casing is sealed and (ii) is corrugated so as to render it



flexible, thereby allowing said member to move relative to said casing without cracking the seal therebetween.

4,239,839

MULTI-CELL BATTERIES

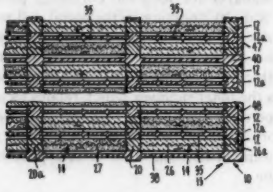
William L. McDowall, Glen Waverley, and Alan K. Maplesden, Kew, both of Australia, assignors to Dunlop Australia Limited, Melbourne, Australia

Filed May 30, 1979, Ser. No. 43,822

Claims priority, application United Kingdom, May 31, 1978, 25532/78

Int. Cl.³ H01M *2/24*

U.S. Cl. 429—154 **3 Claims**



1. A multi-cell battery comprising:

a first assembly of frames,

a second assembly of frames, and

barrier means interposed between said first and second assemblies of frames for electrically and chemically isolating said first and second assemblies from one another;

each of said first and second assemblies of frames comprising:

a plurality of frames secured together in side by side relation, each frame of each assembly having spaced division elements defining with the perimeter of the frame a plurality of support areas arranged side by side across the width of the frame, the perimeter and division elements of the frames in the respective assemblies being secured together in sealed relation so that the perimeters form outer walls of the battery and the division elements form partitions between adjacent cells of the battery, the frame at one end of each assembly of frames having the perimeter and division elements thereof secured in sealed relation to respective opposite sides of the barrier means,

individual masses of active battery material supported in each support area of the frames in each assembly so that each support area forms a plate of the battery, the active battery material in respective areas being selected so that adjacent areas in the same frame form plates of opposite polarity and corresponding areas in adjacent frames of the same assembly form plates of opposite polarity, and

an electrolyte porous insulating separator member between the active battery material of opposite polarity in said corresponding areas,

the first and second assemblies of frames thereby forming independent multi-cell batteries on opposite sides of the barrier means.

4,239,840

PRESSURE CONTACT CONSTRUCTION FOR DRYCELL BATTERIES

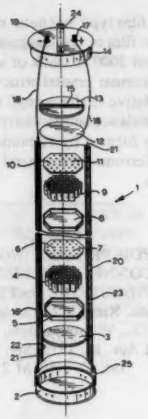
Ashok K. Puri, Toronto, Canada, assignor to Union Carbide Canada Limited, Toronto, Canada

Continuation-in-part of Ser. No. 902,015, May 1, 1978, abandoned. This application Nov. 14, 1979, Ser. No. 93,964

Claims priority, application Canada, Jun. 15, 1977, 280561

Int. Cl.³ H01M *6/42*

U.S. Cl. 429—159 **5 Claims**



1. A battery canister comprising:

(a) a first set of drycell batteries positioned in a first electrically conductive tray of polygonal configuration and having an upturned edge thereon wherein said batteries are firmly positioned in said tray providing a tight fitting for said batteries, the negative terminals of said batteries being connected in parallel by contact with the base of said tray;

(b) a second set of drycell batteries positioned in a second electrically conductive tray of polygonal configuration and having an upturned edge thereon wherein said batteries are firmly positioned in said tray, the negative terminals of said batteries being connected in parallel by contact with the base of said tray;

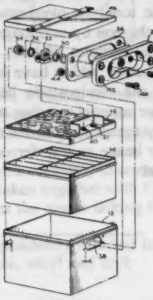
(c) said second tray being stacked above said first tray wherein the positive terminals of said first set of drycell batteries are connected in parallel by contact with the bottom surface of said second tray, said second tray being aligned with respect to said first tray whereby the positive terminals of said first set of drycell batteries are positioned below the negative terminals of said second set of drycell batteries and connected in series therewith by pressure contact providing a tight overall construction, each of said first tray and second tray being of pliant material to conform to the countour of the contacting terminals of the batteries on the adjacent tray;

(d) each of said first tray and second tray being positioned within a sealed casing and electrically insulated therefrom, the base of said first tray being connected to a negative terminal on said casing and the positive terminals of said second set of drycell batteries being connected to a positive terminal on said casing.

4,239,841
AIRCRAFT BATTERY

David L. Rorer, Redlands, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Dec. 10, 1979, Ser. No. 101,419
Int. Cl.³ H01M 2/02
U.S. Cl. 429—179 3 Claims

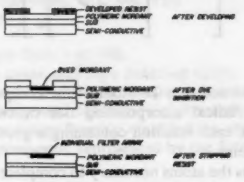


1. An aircraft battery comprising a housing having an aperture in a wall thereof, a casing having a pair of electrical conductors leading therefrom, a cover for the casing through which the pair of conductors protrude, a pair of electrically conductive members each connected to one of the conductors and having an aperture therein aligned with the aperture in the wall of the housing, a receptacle positioned within the aperture in the wall of the housing and having apertures therethrough aligned with the apertures in the pair of members, a pair of electrically conductive pins each threaded at one end and having a surface thereon adapted to receive a wrench for rotating it about its axis, each pin being positioned with its threaded end passing through the apertures in the receptacle and the member and its other end extending beyond the housing, and means for securing the threaded ends of the pins to the members.

4,239,842
COLOR FILTER ARRAYS, COLOR IMAGING DEVICES AND METHODS OF MAKING SAME

Mohammad A. Sandhu, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 913,150, Jun. 6, 1978, Pat. No. 4,196,010.
This application Sep. 13, 1979, Ser. No. 75,387
Int. Cl.³ G03C 5/00, 11/00
U.S. Cl. 430—7 25 Claims



1. In a method for producing a color filter array containing a transparent, polymeric receiving layer capable of receiving a dye comprising the steps of:

A. coating a layer of photoresist over said receiving layer;

B. exposing said photoresist to a pattern representing a set of filter elements;

C. developing said photoresist to obtain window areas in said photoresist layer corresponding to said pattern;

D. diffusing heat-transferable dye into said dye-receiving layer through said window areas so as to form dyed filter elements corresponding to said pattern; and

E. removing the remaining portion of said photoresist;

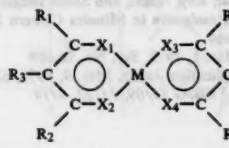
the improvement wherein said receiving layer comprises an amorphous, solvent-soluble, aromatic polyester having recurring units derived from the condensation residue of a diol and a carbonic or diacarboxylic acid, at least 30 mole percent of said recurring units containing a saturated gem-bivalent radical having a saturated polycyclic three-dimensional structure that includes a saturated bicyclic atomic bridge hydrocarbon ring member.

4,239,843
METHOD OF STABILIZING ORGANIC SUBSTRATES AGAINST THE ACTION OF LIGHT

Hiroshi Hara, Asaka, and Yoshiaki Suzuki, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 30, 1978, Ser. No. 955,839
Claims priority, application Japan, Oct. 28, 1977, 52-129348
Int. Cl.³ G03C 7/00
U.S. Cl. 430—17 12 Claims

8. A color photographic material comprising at least one layer containing a photographic dye image wherein said layer or an adjacent layer contains a compound of the formula (I) in an amount sufficient to improve the light fastness of said color photographic material



(I)

where M represents a metal atom selected from the group consisting of Cu, Co, Ni, Pd and Pt; X_1, X_2, X_3 and X_4 each represents an oxygen or sulfur atom; R_1 and R_2 each represents an alkyl, an aryl, a cycloalkyl an oxocyclo alkyl, or a heterocyclic group which may be substituted or unsubstituted and which is attached to the carbon atom on the chelate ring directly or through a divalent connecting group; R_3 represents a hydrogen atom, an alkyl, an aryl, a cycloalkyl, an oxo-cycloalkyl group or hetercyclic group which may be substituted or unsubstituted and which may be attached to the carbon atom on the chelate ring directly or through a divalent connecting group; R_1, R_2 and R_3 may be the same or different and R_1 and R_3, or R_2 and R_3 may combine to form the non-metallic atoms necessary to complete a 5-, 6- or 7-membered nucleus.

4,239,844
ELECTROPHOTOCONDUCTIVE CD S SE MATERIALS WITH CU AND CL

Sixdeniel Faria, and Vincent Chiola, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 779,069, Mar. 18, 1977, abandoned, which is a continuation of Ser. No. 706,625, Jul. 19, 1976, abandoned, which is a continuation of Ser. No. 577,539, May 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 476,694, Jun. 5, 1974, abandoned. This application Mar. 5, 1979, Ser. No. 17,517
Int. Cl.³ G03G 5/08
U.S. Cl. 430—67 1 Claim

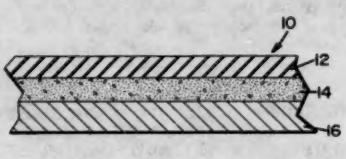
1. An electrophotographic member consisting essentially of:

(a) an electrically conductive base;

(b) a layer of a particulate electrophotoconductive material having a thickness of from about 40 to about 60 micrometers overlying said base, said material consisting essentially of an activated cadmium sulfo-selenide having the molecular formula:

$$Cd(S_xSe_{1-x}):yCu\bullet ZCl$$

wherein x is from about 0.95 to about 0.998, y is from about 0.0001 to about 0.001, and z is from about 0.001 to about 0.0015 and having an average particle size of up to about 3.2 micrometers and about 95% of the particles in the 1 to 5 micrometer range as measured by the Coulter Counter method; and



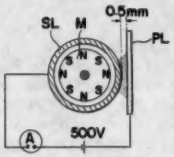
(c) an electrically insulative optically transparent layer overlying said electrophotoconductive layer having a thickness of from about 20 to about 40 micrometers, said member exhibiting initial contrast voltage of at least about 800 volts.

4,239,845

ELECTROPHOTOGRAPHIC COPYING METHOD USING TWO TONERS ON MAGNETIC BRUSH

Susumu Tanaka, Sakai; Koji Nagai, and Sanzi Inagaki, both of Itami, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 1, 1979, Ser. No. 16,609
Claims priority, application Japan, Mar. 9, 1978, 53/27246
Int. Cl.³ G03G *13/09, 13/22, 9/14*
U.S. Cl. 430—122 **5 Claims**



1. An electrophotographic copying method which comprises the steps of:

a. forming an electrostatic latent image on a photoconductive support member, said electrostatic latent image being comprised of an image area and a non-image area;

b. developing the electrostatic latent image to a toner image with a developing material consisting of a particulate, magnetic toner having a volume resistivity of about 10^{10} to 10^{13} Ω-cm and a particulate, non-magnetic, electrically insulating toner;

said magnetic toner being present in an amount of 85 to 98% and said non-magnetic toner being present in an amount of 2 to 15%, said percentages being based on the total weight of the development material;

said development, being effected by the magnetic brush method and comprising:

(i) triboelectrically charging said magnetic and non-magnetic toners, the polarity of said non-magnetic toner being opposite that of said electrostatic latent image and the polarity of said magnetic toner being the same as that of said electrostatic latent image,

(ii) magnetically attracting said developing material to the surface of a sleeve having a magnet housed therein to form a magnetic brush thereon and

(iii) contacting said electrostatic latent image with said magnetic brush whereby particles of both magnetic and non-magnetic toner are deposited on and adhere to said image area and particles of said magnetic toner are deposited on and adhere to said non-image area; and during said development applying a bias voltage of the same polarity but of a higher value than the potential of the non-image area of said latent image, to avoid deposition of particles of non-magnetic particles on said non-image area and to permit the magnetic toner to overcome the magnetic force exerted thereon by said magnet in said sleeve;

b. transferring the particles of both of the magnetic and non-magnetic toners, which have been deposited on the image area of the electrostatic latent image, from the photoconductive support member to a sheet of final support material by means of a corona charge technique; and

c. fixing the toner image so transferred to the sheet of final support material.

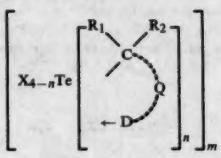
4,239,846

TELLURIUM (IV) COMPOUNDS AND COMPOSITIONS

Henry J. Gysling, and Sylvia A. Gardner, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1978, Ser. No. 894,863
Int. Cl.³ G03C *5/54, 1/00, 5/24, 1/02*
U.S. Cl. 430—202 **26 Claims**

1. An image-forming combination comprising (i) a tellurium-(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

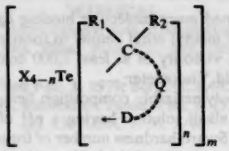
X is an anion;

n is 1; and

m is an integer from 1 to 500;

as an oxidizing agent, and (ii) a reducing agent.

8. An amplification element comprising a support having coated thereon an image-forming combination comprising (i) a tellurium(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

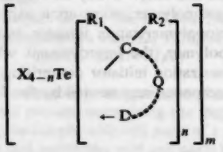
X is an anion;

n is 1; and

m is an integer from 1 to 500,

as an oxidizing agent, and (ii) a reducing agent.

15. A photothermographic element comprising a support having coated thereon, in reactive association, (a) a photosensitive metal compound, and (b) an image-forming combination comprising (i) a tellurium(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater then 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

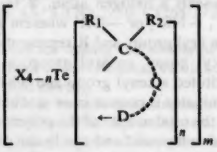
X is an anion;

n is 1; and

m is an integer from 1 to 500,

as an oxidizing agent, and (ii) a reducing agent.

24. A process for forming an image comprising the step of contacting an imagewise distribution of physically developable catalyst with an image-forming combination comprising (i) a tellurium(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

X is an anion;

n is 1; and

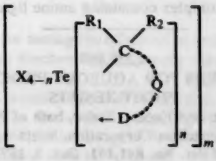
m is an integer from 1 to 500,

as an oxidizing agent, and (ii) a reducing agent.

26. In a process for forming an image comprising the steps of:

(1) imagewise exposing a photosensitive layer comprising a photographic metal salt; and

(2) diffusing unexposed photographic metal salt from said photosensitive layer into a developer layer comprising an image-forming combination where said unexposed salt is reduced and catalyzes an image-forming reaction, thereby forming a positive image in said developer layer, the improvement wherein said image-forming combination comprises (i) a tellurium(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

X is an anion;

n is 1; and

m is an integer from 1 to 500,

as an oxidizing agent, and (ii) a reducing agent.

4,239,847

PHOTOGRAPHIC ELEMENTS CONTAINING POLYMERS WHICH COORDINATE WITH METAL IONS

William C. Archie, Jr., and Gerald A. Campbell, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,477

Int. Cl.[3] G03C *1/40, 5/54*

U.S. Cl. 430—213 **20 Claims**

1. An image transfer film unit comprising:

(1) a support having thereon at least one layer containing a photosensitive silver halide emulsion having associated therewith a dye ligand or dye ligand forming material;

(2) a dye image-receiving layer comprising a dye mordant; and

(3) an alkaline processing composition and means for discharging same within said film unit in contact with said photosensitive layer;

said film unit containing a silver halide developing agent, the improvement wherein there is present either in the dye image-receiving layer containing the dye mordant or in a layer adjacent to said dye mordant layer, a polymer containing groups

which form coordination complexes with metal ions, said polymer having associated therewith a source of metal ions wherein the stability constant of a complex of the polymer and metal ions is at least 10^{10}, said metal ions being on the side of the mordant layer opposite that closest to the said dye ligand or dye ligand forming material-containing layer.

4,239,848

PHOTOCROSSLINKABLE CARBONYL-CONTAINING POLYMERIC COMPOSITION AND ELEMENT WITH COBALT COMPLEX

Anthony Adin, and John C. Wilson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 918,865, Jun. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 872,852, Jan. 27, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,541

Int. Cl.[2] G03C *1/00, 1/68*

U.S. Cl. 430—270 **24 Claims**

1. A photocrosslinked composition, comprising,

as the major portion thereof, a polymeric binder containing a recurring unit bearing one or more carbonyl groups capable of reacting with an amine to form a crosslinked carbinolamine; and

as a minor portion thereof, a thermally stable, reducible cobalt(III) complex containing amine ligands.

4,239,849

POLYMERS FOR AQUEOUS PROCESSED PHOTORESISTS

Melvin A. Lipson, and Eugene Zador, both of Fullerton, Calif., assignors to Dynachem Corporation, Santa Ana, Calif.

Continuation of Ser. No. 841,161, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 727,498, Sep. 28, 1976, abandoned, which is a continuation of Ser. No. 511,929, Oct. 4, 1974, abandoned. This application Jun. 19, 1978, Ser. No. 916,433

Int. Cl.[2] G03C *1/68*

U.S. Cl. 430—281 **11 Claims**

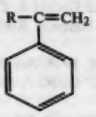
1. A photopolymerizable composition in the form of a dry film on a support capable of being formed into rolls and exhibiting improved cold flow properties comprising:

(A) from 10 to 60 parts by weight of one or more addition polymerizable non-gaseous ethylenically unsaturated compounds having a boiling point above 100° C.;

(B) a photo-initiated free-radical generating addition polymerization initiating system; and

(C) from 40 to 90 parts by weight of a preformed macromolecular polymeric binding agent which is a polymer of

40 to 60 parts of a first monomeric material which contains one or more styrene-type compounds selected from the group having the general formula:



wherein R is hydrogen, an alkyl group having from 1 to 6 carbon atoms or a halo group or ring-substituted derivative thereof;

15 to 45 percent of a second monomeric material which contains one or more compounds selected from the group comprising alkyl acrylate, alkyl methacrylate, hydroxyalkyl acrylate or an hydroxyalkyl methacrylate wherein the alkyl groups have from 1 to 6 carbon atoms and the hydroxyalkyl groups have from 2 to 6 carbon atoms; and

15 to 40 percent of a third monomeric material which contains one or more alpha, beta-unsaturated carboxyl-containing monomers having from 3 to 15 carbon atoms;

the preformed macromolecular binding agent, when dissolved in methyl ethyl ketone to form a 40% solution, having a viscosity of at least 2,000 centipoises on the Brookfield Viscometer;

the photopolymerizable composition being soluble in an aqueous alkali solution having a pH of from 9 to 14 having a Sward hardness number of from 10 to 20 when in the form of a 1 mil thick film and a Sward hardness number of from 8 to 14 when in the form of 2 mil thick film.

4,239,850

PHOTOPOLYMERIZABLE COMPOSITION

Nobuyuki Kita; Toshio Uchida, both of Shizuoka; Sadaharu Ikeda, Asaka, and Shigeru Sato, Minami-Ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

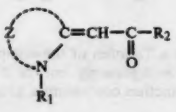
Filed Nov. 22, 1978, Ser. No. 962,850

Claims priority, application Japan, Nov. 29, 1977, 52-142272

Int. Cl.[3] G03C *1/68*

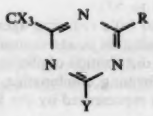
U.S. Cl. 430—281 **14 Claims**

1. In a photopolymerizable composition comprising a monomer having at lest two ethylenically unsaturated bonds which is capable of photopolymerization upon exposure to actinic radiation, a photopolymerization initiator and, optionally, a linear organic polymer, the improvement which comprises said photopolymerization initiator comprising a combination of at least one compound represented by the formula (I)



(I)

wherein Z represents the non-metal atoms necessary to form a nitrogen containing heterocyclic nucleus, R_1 represents an alkyl group or a substituted alkyl group, and R_2 represents an alkyl group or an aryl group, and at least one compound represented by the formula (II)



(II)

wherein X represents a halogen atom, Y represents $—CH_3$, $—NH_2$, —NHR′, $—NR'_2$ or —OR′ wherein R′ represents an alkyl group or an aryl group, and R represents an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or a substituted alkenyl group and wherein said photopolymerization initiator is present in an amount of 1 to 10% by weight based on the total weight of the polymerizable ethylenically unsaturated compound and the linear organic high molecular weight compounds and wherein the ratio of the compound represented by formula (I) to the compound represented by formula (II) of said photopolymerization initiator is 4:1 to 1:4.

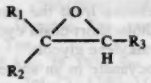
4,239,851

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kozo Aoki, and Yukio Yokota, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 1, 1979, Ser. No. 8,442
Claims priority, application Japan, Feb. 2, 1978, 53/10684
Int. Cl.³ G03C *5/50, 1/40*
U.S. Cl. 430—377 **11 Claims**

1. A process for forming a photographic light-sensitive material which comprises dissolving an oil-soluble photographic additive in an epoxy compound of the formula (II):



(II)

wherein R_1, R_2 and R_3 each represents an alkyl or a substituted alkyl group having 1 to 40 carbon atoms, an alkoxycarbonyl or substituted alkoxycarbonyl group having 1 to 40 carbon atoms or a hydrogen atom provided that at least one of R_1, R_2 and R_3 is an alkyl group substituted by an alkoxycarbonyl group, an aryloxycarbonyl group or an aryloxy group having 8 to 40 carbon atoms and the sum of the number of carbon atoms of R_1, R_2 and R_3 is 8 to 60.

4,239,852

ANTIBIOTIC DETECTION METHOD

Stanley E. Charm, Newton, Mass., assignor to Penicillin Assays, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 853,541, Nov. 21, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 914,414
Int. Cl.² G01N *31/14*
U.S. Cl. 435—32 **17 Claims**

1. A process for detecting the presence of an antibiotic in a liquid sample, said process comprising the steps of:

A. incubating the sample with cell parts of a microorganism, sensitive to said antibiotic, said cell parts having receptor sites capable of binding to said antibiotic, said incubation being conducted under conditions to allow antibiotic molecules, if present in the sample, to bind to said receptor sites;

B. incubating the mixture of step A with an enzyme-tagged substance capable of binding with said receptor sites;

C. separating the cell parts from the liquid;

D. determining the amount of enzyme-tagged substance associated either with the separated cell parts or with the liquid; and

E. comparing the determination of step D with a standard to obtain an indication of the presence of antibiotic in the sample.

4,239,853

ANTIBIOTIC TESTING METHOD AND APPARATUS HAVING A CHANNELIZED RESERVOIR

Rex L. Bradley, 6620 Manor Rd., Austin, Tex. 78751

Filed Jan. 22, 1979, Ser. No. 5,351
The portion of the term of this patent subsequent to Feb. 28, 1995, has been disclaimed.
Int. Cl.³ C12Q *1/20;* **C12M** *1/20*
U.S. Cl. 435—33 **21 Claims**

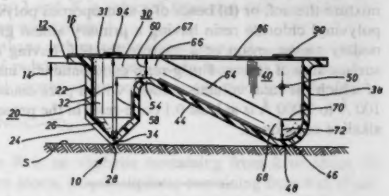
1. In an apparatus for testing the effects of an antibiotic or chemical on bacterial or biochemical substances, said apparatus being of the type having:

(a) a plurality of side-by-side test chambers each adapted to receive therein a bacterial or biochemical substance, each test chamber being separated from the next-adjacent test chamber by a side wall;

(b) a common reservoir disposed adjacent each of the test chambers, the reservoir being separated from each of the test chambers by a barrier having a height less than the height of the side walls, the reservoir having an axis of rotation extending therethrough;

wherein the improvement comprises:

an array of guide walls disposed within the reservoir, each guide wall merging into one of the side walls and cooperating with its next-adjacent guide wall to define an array of channels, each channel communicating with one of the test chambers and each adapted to channelize a liquid disposed in the reservoir into the test chamber with which it is associated upon rotation of the apparatus about the axis of rotation such that a flow of liquid is maintained from the reservoir to each test chamber even if the apparatus is tilted during rotation thereof about the axis of rotation.



21. A method for testing the effects of an antibiotic or chemical on bacterial or biochemical substances comprising the steps of:

introducing a liquid suspension containing an antibiotic or chemical to be tested into a common reservoir of a test apparatus until the level liquid in the reservoir lies above the lower end of an array of guide walls disposed within the reservoir;

rotating the apparatus about an axis of rotation to cause a channelized flow of liquid from the reservoir into each of a plurality of test chambers disposed in fluid communication with the reservoir; and

observing each of the plurality of test chambers to test the affects of the antibiotic or chemical on the bacterial or biochemical substances.

4,239,854

ENZYME-IMMOBILIZATION CARRIERS AND PREPARATION THEREOF

Hideo Hirohara; Shigeyasu Nabeshima, both of Ibaraki, and Tsuneyuki Nagase, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 24, 1978, Ser. No. 899,466
Int. Cl.³ C09J *8/00;* **C08G** *2/00*
U.S. Cl. 521—31 **12 Claims**

1. An enzyme-immobilization carrier which comprises a macroporous, synthetic amphoteric ion-exchange resin having a specific surface area of at least 1 m^2/g-resin containing macropores with a pore diameter of 100 Å to 2,000 Å, of which total volume is at least 0.1 cc/g-resin; said resin comprising (a) a phenol resin matrix having a primary amino group, secondary amino group, tertiary amino group, quaternary ammonium group or a mixture thereof as an anion-exchanger and a carboxymethyl group linked to the matrix through a phenolic ether linkage or to said primary or secondary amino group, wherein the cation=exchange capacity due to the carboxymethyl group is not less than 0.5 meq/g-resin and the anion-exchange capacity due to the amino group, substituted amino groups or the mixture thereof is not less than 1 meq/g-resin, or (b) a polystyrene or polyvinyl chloride matrix having at least a primary amino group, secondary amino group or a mixture thereof as an anion-exchanger and a carboxymethyl group linked to said primary or secondary amino group, wherein the cation-exchange capacity due to the carboxymethyl group is not less than 0.5 meq/g-resin and the anion-exchange capacity

due to the amino group, substituted amino groups or the mixture thereof is not less than 1 meq/g-resin.

6. A process for producing an enzyme-immobilization carrier comprising a macroporous, synthetic amphoteric ion-exchange resin having a carboxymethyl group of which the cation-exchange capacity is not less than 0.5 meq/g-resin and an amino group, a substituted amino group or a mixture thereof which the anion-exchange capacities are not less than 1 meq/g-resin, which comprises reacting a compound of the formula:

$$XCH_2COOY$$

wherein X is halogen and Y is hydrogen or an alkali metal with (a) granules or beads of a solid, macroporous phenol resin having a primary amino group, a secondary amino group or a mixture thereof, or (b) beads of a macroporous polystyrene or polyvinyl chloride resin having a primary amino group, secondary amino group or a mixture thereof, having a specific surface area of at least 1 m^2g-resin and containing macropores of which the total volume of those with a pore diameter from 100 Å to 2,000 Å is at least 0.1 cc/g-resin in the presence of an alkaline compound.

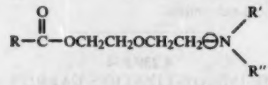
4,239,855

POLYURETHANE CATALYSTS AND METHOD OF USE

Robert L. Zimmerman, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Jul. 21, 1978, Ser. No. 927,244
Int. Cl.³ C08G *18/20, 18/18;* C07C *93/16, 93/26*
U.S. Cl. 521—115 **6 Claims**

1. A method for producing a polyurethane which comprises reacting an organic polyisocyanate with an organic polyester polyol or polyether polyol in the presence of a catalytic amount of a compound having the following structural formula:



where R is a radical selected from the group consisting of lower alkyl, lower alkenyl and phenyl and R′ and R″ are either independently lower alkyl or when taken together with the adjacent nitrogen atom form a morpholino radical.

4,239,856

METHOD FOR PREPARING HIGH-RESILIENT FLEXIBLE URETHANE FOAMS

Richard L. Rowton, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,303
Int. Cl.³ C08G *18/14, 18/32*
U.S. Cl. 521—118 **2 Claims**

1. In a process of preventing splits in high-resilient, flexible polyurethane foam which is the reaction product of a polyether triol of about 5000 to 7000 molecular weight and a methylene diphenyl diisocyanate modified to assume a liquid form and in the presence of water as the only blowing agent, the improvement which comprises

reacting the components in the presence of from about 0.2 to about 2.0 parts by weight of diethanolamine per 100 parts by weight of triol.

4,239,857

PROCESS FOR PRODUCING SOLID OR MICROCELLULAR POLYURETHANE ELASTOMERS HAVING IMPROVED GREEN STRENGTH

Bill D. Harper, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

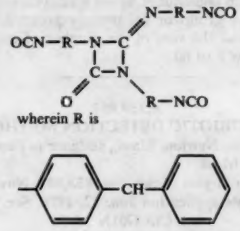
Filed Jun. 29, 1978, Ser. No. 920,458
Int. Cl.³ C08G *18/14, 18/24, 18/79*
U.S. Cl. 521—121 **37 Claims**

1. A process for producing a solid or microcellular polyether polyurethane elastomer having improved green strength which comprises forming and curing a reaction mixture containing:

(a) a polyether polyol,

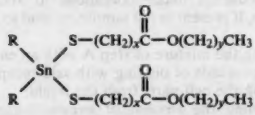
(b) a diol extender selected from the group consisting of short-chain alkane diols, short-chain cycloaliphatic diols, and short-chain oxyalkylene glycols,

(c) an organic polyisocyanate in an amount that provides from 0.8 to 1.3 isocyanato groups per active-hydrogen group in the reaction mixture, wherein said organic polyisocyanate comprises a major amount of 4,4′-diphenylmethane diisocyanate and a minor amount of



wherein R is

(d) from about 0.200 to about 0.400 parts by weight per 100 parts by weight of the active hydrogen-containing components in the reaction mixture of a dialkyltin dimercaptide carboxylic acid ester catalyst of the formula:



wherein R is an alkyl group selected from the group consisting of methyl, butyl and octyl, x is an integer of from 1 to 4 and y is an integer of from 1 to 10, said catalyst being present in from about 1.5 to about 8 times a catalytic amount,

said reaction mixture containing from 95 to 25 parts by weight of (a) and from 5 to 75 parts by weight of (b) per 100 parts by weight of (a) and (b), with the proviso that when a microcellular polyether polyurethane is being produced, the reaction mixture also contains:

(e) a blowing agent in an amount sufficient to produce a microcellular structure in the elastomer.

4,239,858

COATING COMPOSITIONS COMPRISING POLYMER BLENDS

Irving Serlin, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed May 11, 1979, Ser. No. 38,157
The portion of the term of this patent subsequent to Aug. 21, 1996, has been disclaimed.
Int. Cl.³ C08L *25/06*
U.S. Cl. 525—57 **6 Claims**

1. A coating composition comprising an intimate polymer

blend of from about 40 to about 90 parts by weight of a polyvinyl acetal and from about 10 to about 60 parts by weight of a homopolymer of styrene or α-methylstyrene of molecular weight in the range of about 500 to about 1500 wherein the poly(vinyl acetal) is an interpolymer of a C_5 to C_9 vinyl acetal, a C_4 to C_{10} vinyl carboxylate and vinyl alcohol, of weight average molecular weight in the range of about 20,000 to 500,000, comprising less than about 30 weight percent vinyl carboxylate units and from about 5 to about 21 weight percent of vinyl alcohol units.

4,239,859

HIGH IMPACT POLYSTYRENE BLEND COMPOSITIONS

Charles R. Miller, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 29, 1979, Ser. No. 70,559
Int. Cl.³ C08L *53/02*
U.S. Cl. 525—98 **10 Claims**

1. A polymeric composition comprising a mixture of 100 parts by weight of a styrene polymer and about 15 to about 50 parts by weight of an AB block copolymer, said polymeric composition being obtained by intimately mixing said styrene polymer and said AB block copolymer at an elevated mixing temperature sufficient to provide impact improvement but below the decomposition temperature of said polymers wherein

(a) said A block is a polymer block of a monoalkenyl arene having a weight average molecular weight between about 20,000 and about 150,000,

(b) the weight percent of said A block in said block copolymer is between about 15 percent by weight and about 35 percent by weight; and

(c) said B block is a polymer block of butadiene having a vinyl 1,2 configuration of 20 percent or greater.

4,239,860

AMINE TERMINATED POLYMERS AND THE FORMATION OF BLOCK COPOLYMERS

William L. Hergenrother; Richard A. Schwarz; Richard J. Ambrose, all of Akron, and Robert A. Hayes, Cuyahoga Falls, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 848,962, Nov. 7, 1977, Pat. No. 4,151,222, which is a continuation-in-part of Ser. No. 574,676, May 5, 1975, Pat. No. 4,070,344. This application Mar. 5, 1979, Ser. No. 17,672
Int. Cl.³ C08F *26/00*
U.S. Cl. 525—131 **18 Claims**

1. A urethane block copolymer composition, comprising:

an amine terminated polymer connected to a urethane polymer constituent to form the urethane block copolymer;

said amine terminated polymer being an end capped polymer formed by the reaction of an anionically prepared polymer and a single polyisocyanate or polyisothiocyanate compound so that at least one unreacted isocyanate or isothiocyanate end portion exists wherein said unreacted isocyanate or isothiocyanate end portion has been converted to an amine group;

said anionically prepared polymer being a homopolymer or a copolymer, said homopolymer made from monomers selected from the class consisting of conjugated diene, vinyl substituted aromatic, vinyl substituted pyridine, vinyl substituted quinoline, and a compound selected from the class consisting of

1. $CH_2{=}CACN$ wherein A is CN, CF_3, CH_3 or H;
2. $CH_2{=}CACO_2R$ wherein A is CO_2R, SO_2R, CH_3 or H;
3. $CH_2{=}CANO_2$ wherein A is Cl, CH_3 or H;
4. $CH_2{=}CACON\ (R)_2$ wherein A is CH_3 or H;

wherein R is a 1 to 15 carbon atom alkyl, a 4 to 15 carbon atom cycloalkyl, an aryl, a 1 to 15 carbon atom alkyl substituted aryl, a 4 to 15 carbon atom cycloalkyl substituted aryl, or hydrogen,

said copolymer made from monomers of conjugated dienes and vinyl substituted aromatics;

said amine terminated polymer having a molecular weight of from about 3,000 to about 100,000;

said polyisocyanate and said polyisothiocyanate having the formula

$$R\text{-}(N{=}C{=}X)_n$$

wherein R is an aliphatic containing from 2 to about 20 carbon atoms, a cycloaliphatic containing from 4 to about 20 carbon atoms, an aromatic containing from 6 to about 20 carbon atoms, and combinations thereof, n is an integer of 2 or 3 and X is selected from the class consisting of oxygen and sulfur;

said urethane polymer constituent being the reaction product of polyhydroxy compounds having at least two hydroxyl groups and a polyisocyanate having the formula

$$R\text{-}(N{=}C{=}X)_n$$

wherein R is an aliphatic containing from 2 to about 20 carbon atoms, a cycloaliphatic containing from 4 to about 20 carbon atoms, an aromatic containing from 6 to about 20 carbon atoms, and combinations thereof, n is an integer of 2 or 3 and X is selected from the class consisting of oxygen and sulfur;

the amount of said urethane polymer ranging from about 5% to about 95% based upon the total weight of said block copolymer, and the molecular weight of said urethane polymer constituent ranging from about 1,000 to about 100,000.

4,239,861

POLYVINYL CHLORIDE-POLYCARBONATE ALLOYS

Hans-Eberhard Braese; Winfried Fischer; Dietrich Hardt, all of Cologne; Richard Prinz, Leverkusen, and Volker Serini, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 14, 1975, Ser. No. 541,011
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1974, 2402175
Int. Cl.³ C08L *67/06*
U.S. Cl. 525—151 **9 Claims**

1. A polymer composition comprising:

(a) from 20 to 90% by weight of a member selected from the group consisting of (i) vinyl chloride homopolymer and (ii) a copolymer consisting of copolymerized vinyl chloride and up to 30% by weight of a monomer selected from the group consisting of vinylidene chloride; vinylidene fluoride; vinyl acetate; vinyl propionate; vinyl benzoate; acrylic acid; methacrylic acid; alkyl esters, amides and nitriles of acrylic and methacrylic acids; maleic acid esters; maleic imides; vinyl ethers; ethylene; propylene and butylene, and

(b) from 80 to 10% by weight of at least one aromatic polycarbonate which is a polyester of carbonic acid derived from a dihydroxyl compound in which the hydroxyl groups are directly attached to one or more aromatic rings.

4,239,862

THERMOPLASTIC ELASTOMER CONTAINING LONG CHAIN ALIPHATIC ALCOHOL

Demetreos N. Matthews, Bethany; Walter Nudenberg, and Henno A. Petersen, both of Newtown, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,307
Int. Cl.[3] C08L 23/16
U.S. Cl. 525—240 10 Claims

1. A thermoplastic elastomer comprising a blend of:

(A) a monoolefin copolymer rubber which is a copolymer of ethylene and an alpha-monoolefin of the formula CH_2=CHR where R is an alkyl radical having 1 to 12 carbon atoms, and optionally a copolymerizable diene termonomer;

(B) a crystalline polyolefin resin;

(C) a long-chain aliphatic alcohol having at least 16 carbon atoms;

(D) optionally an amorphous non-elastomeric polypropylene homopolymer or amorphous non-elastomeric copolymer of propylene with another monoolefin; and

(E) optionally a naphthenic or paraffinic extender oil;

the said ingredients being present in the following proportions, expressed as percentages by weight based on the total weight of (A), (B), (C), (D) and (E):

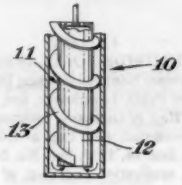
from 15 to 80% of (A);
from 15 to 80% of (B);
from 3 to 40% of (C);
from 0 to 45% of (D); and
from 0 to 40% of (E).

4,239,863

PROCESS FOR THE POLYMERIZATION OF ACRYLONITRILE-BUTADIENE-STYRENE RESINS

Corwin J. Bredeweg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1979, Ser. No. 52,706
Int. Cl.[3] C08F 291/02
U.S. Cl. 525—263 6 Claims



1. A process for the preparation of acrylonitrile-butadiene-styrene resins wherein styrene and acrylonitrile are copolymerized in the presence of a soluble butadiene reinforcing rubber, the butadiene rubber being dissolved in a mixture of acrylonitrile and styrene, initiating polymerization of the styrene and acrylonitrile thereby causing the rubber under the influence of agitation to separate in the form of a plurality of particles having average diameters of about 0.2 to about 5 microns, continuing polymerization of the styrene and acrylonitrile until from about 50 to about 90 weight percent of the styrene and acrylonitrile have copolymerized, removing at least a majority of non-volatile material therefrom and recovering an ABS polymer, the improvement which comprises incorporating within the ABS solution prior to polymerization a free radical polymerization initiating material which is a tertiary butyl peroxy ester having a 10 hour half-life of between about 50° and 95° C., or mixtures thereof.

4,239,864

ELIMINATION OF STABILIZER FOR HIGH NITRILE RESINS BY USING A LATEX DEWATERING EXTRUDER FOR PRODUCT RECOVERY

William J. Miloscia, Shaker Heights, and Louis R. Trott, Streetsboro, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 930,447, Aug. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 874,092, Jan. 31, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 66,145
Int. Cl.[2] C08L 55/02
U.S. Cl. 525—316 4 Claims

1. In the process for recovering solids having good stability against loss of impact strength and resin yellowing from a polymeric latex polymer wherein said polymer is composed of 100 parts by weight of the polymerization product of the monomers

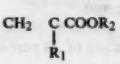
(A) at least 50% by weight of at least one nitrile having the structure

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

(B) up to 50% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of

1. styrene,

2. an ester having the structure



wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

3. an alpha-olefin having the structure

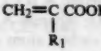
wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

4. a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers, and

5. vinyl acetate, wherein said monomers are copolymerized in the presence of from 0 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally at least one comonomer selected from the group consisting of styrene, a nitrile monomer having the structure

wherein R has the foregoing designation, and an ester having the structure



wherein R_1 and R_2 have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer, the improvement comprising passing said polymeric latex through a screw extruder at a temperature above 150° F. without the use of an oxidizing or thermal degradation stabilizer.

4,239,865

POLYVINYL (DIALKYLTHIOCARBAMOYLTHIO)ACETATE RESIN, METHOD FOR PRODUCING SAME AND HEAVY METALS-REMOVING AGENT COMPRISING SAME

Ryohkichi Tarao, Yokosukashi; Kanji Kaku, Yokohamashi; Masaki Hayashi, Yokohamashi; Takao Nakamura, Yokohamashi, and Shigeo Ohishi, Funabashishi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

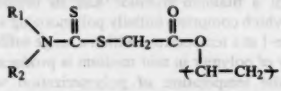
Filed Nov. 9, 1977, Ser. No. 849,923

Claims priority, application Japan, Nov. 17, 1976, 51/137984

Int. Cl.³ C08F *8/34*; C02B *1/42*

U.S. Cl. 525—327 **10 Claims**

1. An agent for removing heavy metals selected from the group consisting of Hg, Cu and Cr, which agent comprises a polyvinyl(dialkylthiocarbamoylthio)acetate resin which is a polymer having a unit expressed by the formula



wherein R_1 and R_2 each represent hydrogen atom or an alkyl group of C_1–C_5 and is a reaction product of a vinyl acetate polymer with a tetraalkylthiuramdisulfide, said agent being insoluble in benzene and having the ability to remove metals selected from the group consisting of Hg, Cu and Cr from solutions containing the same.

4,239,866

CURABLE COATING COMPOSITION

Christian Reitel, Heidelberg, and Lutz Goethlich, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

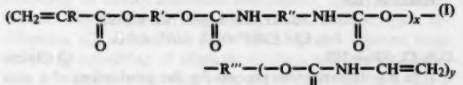
Continuation of Ser. No. 821,550, Aug. 3, 1977, abandoned. This application May 25, 1979, Ser. No. 42,564

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1976, 2636426; Aug. 13, 1976, 2636428

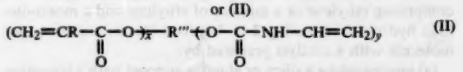
Int. Cl.³ C08L *27/00*

U.S. Cl. 525—440 **9 Claims**

1. A radiation-curable binder for coating compositions which binder comprises one or more olefinically unsaturated compounds of the general formula (I)



or (II)



where x and y may be identical or different and each is a number from 1 to 5, R is hydrogen or methyl, R′ is a divalent linear or branched radical of 2 to 16 carbon atoms which may or may not contain oxa groups, or is a divalent cycloaliphatic radical of 5 to 12 carbon atoms, R″ is a divalent linear or branched aliphatic, cycloaliphatic or aromatic radical of 6 to 15 carbon atoms and R‴ is a radical which is derived from a polyhydric alcohol, a polyether-ol or a polyester-ol and which has a valency corresponding to the sum of x+y, with or without additional other radiation-curable olefinically unsaturated compounds having acrylyl radicals.

4,239,867

INHIBITED CURABLE SOLVENTLESS ORGANOPOLYSILOXANE COMPOSITIONS

Gary E. Legrow, and Laura A. Gauthier, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 4, 1979, Ser. No. 44,893

Int. Cl.³ C08L *83/06*

U.S. Cl. 525—478 **29 Claims**

1. An improved curable composition comprising

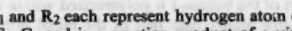
(a) an organopolysiloxane containing from 67 to 85 mol percent $C_6H_5SiO_{3/2}$ units and 33 to 15 mol percent of $CH_2{=}CH(CH_3)_2SiO_{\frac{1}{2}}$ units, said organopolysiloxane having an average of at least 8 silicon atoms per molecule;

(b) a silicon hydride containing polysiloxane crosslinker for (a), said (b) being present in an amount sufficient to provide about 0.9 to 1.1 mol of silicon hydride per mol of $CH_2{=}CHSi{\equiv}$ present in (a) and (e);

(c) a platinum catalyst of the formula $[(C_4H_9)_3PPtCl_2]_2$;

(d) a catalyst inhibitor of the general formula $R^1R^2R^3N$ wherein R^1, R^2 and R^3 are each monovalent alkyl radicals containing from 1 to 28 carbon atoms, there is a total of from 12 to 30 carbon atoms in the molecule; and

(e) a reactive diluent of the formula



4,239,868

CROSS-LINKABLE STRUCTURALLY COLORED POLYMERS, THEIR PREPARATION AND THEIR USE IN COMPOSITIONS FOR COATINGS

Evelyne J. M. Bonnet, Mont Saint Aignan, and Philippe Y. E. Gangneux, Bihorel, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

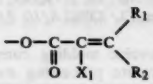
Filed Jan. 24, 1978, Ser. No. 871,912

Claims priority, application France, Jan. 28, 1977, 77 02390

Int. Cl.³ C08L *33/08, 39/04*

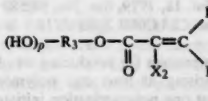
U.S. Cl. 525—279 **7 Claims**

1. A structurally colored polymer having a number-average molecular weight between 1000 and 12,880 g and carrying m hydroxy functions and n groups of the formula:



in which X_1 is a member selected from hydrogen and methyl, R_1 and R_2 are the same or different and represent a member selected from hydrogen and methyl, m is a number from 0 to 49 and n is a number from 2 to 70 such that the sum m+n is from 7 to 70 and the ratio m/n is from 0 to 2.4, said polymer being obtained by:

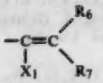
(a) first preparing a structurally colored oligomer containing m+n hydroxy functions, m and n being as defined above, by free radical polymerization of one or more monomers of the formula:



(I)

in which X_2 is a member selected from hydrogen and methyl, R_4 and R_5 are the same or different and represent a member selected from hydrogen and methyl, R_3 is an

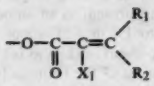
aliphatic linear or branched hydrocarbon containing from 2 to 7 carbon atoms or said hydrocarbon substituted by chlorine, and p is equal to 1 or 2, in the presence of one or more dyestuffs containing one or two groups of the formula:



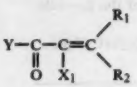
(III)

in which X_1 is as defined above, and R_6 and R_7 are the same or different and represent a member selected from hydrogen and methyl, and containing no group reactive towards hydroxy functions, and

(b) converting n hydroxy functions of the oligomer prepared in (a) into groups of the formula:



by reaction of the said oligomer with a compound of the formula:



(II)

in which Y is a member selected from chlorine and bromine, and X_1, R_1, R_2 have the same definition as above, in the absence of dyestuff, the amount of compound of formula (II) introduced being calculated to act on n of the hydroxy functions of the oligomer formed in (a), the total amount of dyestuff used representing 0.5% to 20% by weight of the whole of the compounds used.

4,239,869

PHENOLIC RESINS WITH IMPROVED LOW TEMPERATURE PROCESSING STABILITY

Myron C. Annis, North Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 915,335, Jun. 13, 1978. This application Apr. 13, 1979, Ser. No. 29,946

Int. Cl.³ C08G *8/10, 8/28*

U.S. Cl. 525—503 **4 Claims**

1. A phenolic novolac molding composition having improved low temperature processing stability comprising a phenol-aldehyde resin containing about 0.63 to 0.68 mole aldehyde per mole of phenol, and having a heterogeneity index in the range of about 1.5 to 2, a melt viscosity in the range of 500 to 1200 centipoises at 135° C., and a brittle point of 63° to 70° C. clear.

4,239,870

PROCESS FOR COUNTERING EFFECTS OF FAST POISONS IN CONTINUOUS OLEFIN POLYMERIZATION

Richard L. Smith, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 18, 1979, Ser. No. 58,587

Int. Cl.³ C08F *2/06, 2/14*

U.S. Cl. 526—59 **38 Claims**

1. In a continuous process for producing an olefin polymer wherein feed comprising at least one polymerizable olefin monomer and at least one polymerization initiator or catalyst are continuously brought into contact under polymerization conditions in a polymerization zone in the presence of olefin polymer, the improvement consisting essentially of contacting at least a portion of said feed which contains fast poisons with at least one suitable scavenging agent in a scavenging zone separate from the polymerization zone under conditions such that at least a portion of said fast poisons are inactivated without causing any significant amount of polymerization in said scavenging zone, and then contacting the product resulting from the scavenging zone with said initiator or catalyst in said polymerization zone under conditions sufficient to produce said olefin polymer.

4,239,871

PROCESS FOR POLYMERIZATION OF BUTENE

Kunisuke Fukui, Ohtake, Japan, assignor to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,420

Claims priority, application Japan, Nov. 28, 1978, 53/146045

Int. Cl.³ C08F *2/14, 110/08*

U.S. Cl. 526—73 **3 Claims**

1. In a process for the polymerization of butene-1 in a liquid aliphatic hydrocarbon medium in the presence of a catalyst composed of a titanium trihalide and an organoaluminum compound which comprises initially polymerizing a minor part of the butene-1 at a temperature within a range sufficiently low that a slurry of polymer in said medium is produced and then increasing the temperature of polymerization so that the greater part of the butene-1 is polymerized within a high temperature range higher than that of the initial polymerization but not at a temperature so high that the polymer formed dissolves in said medium; the improvement wherein

(1) the initial polymerization is carried out at a temperature of not more than 20° C. in the presence of said titanium trihalide in an amount of not less than 50 millimoles and up to 1,000 millimoles per liter of said medium, and then

(2) the polymerization is carried out in the presence or absence of said medium at a temperature of 25° C. to less than 48° C. in the presence of said titanium trihalide in an amount up to one-fifth of that of the initial polymerization.

4,239,872

OLEFINE POLYMERIZATION WITH SUPPORTED CATALYSTS

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 17, 1979, Ser. No. 86,013

Int. Cl.³ C08F *4/62, 4/66, 4/68*

U.S. Cl. 526—105 **13 Claims**

1. In a polymerization process for the production of a normally solid polymer, the steps of contacting a charging stock comprising ethylene or a mixture of ethylene and a mono-olefinic hydrocarbon having 2 to 4 carbon atoms, inclusive, per molecule with a catalyst prepared by:

(a) impregnating a silica or alumina support with a transition metal salt decomposable upon calcination to the oxide wherein said metal is selected from the group consisting of vanadium, titanium, chromium and mixtures thereof;

(b) calcining the metal impregnated support at a temperature ranging from about 450° C. to about 1000° C.;

(c) impregnating the calcined support with a solution of aluminum hydride; and

(d) heating the hydride impregnated support in hydrogen at a temperature of from about 200° C. to about 600° C.

4,239,873

PROCESS FOR THE POLYMERIZATION OF ALPHA-OLEFINS, CATALYST EMPLOYED IN SAID PROCESS AND METHOD FOR THE PREPARATION THEREOF

Sebastiano Cesca, San Donato Milanese; Alberto Greco, Dresano; Guglielmo Bertolini, Pavia, and Mario Bruzzone, San Donato Milanese, all of Italy, assignors to Snamprogetti, San Donato Milanese, Italy

Continuation of Ser. No. 568,169, Apr. 15, 1975, abandoned. This application Dec. 23, 1977, Ser. No. 863,695
Claims priority, application Italy, Apr. 17, 1974, 21517 A/74
Int. Cl.[3] C08F *4/02, 10/02*
U.S. Cl. 526—114 6 Claims

1. A process for the polymerization of an alpha-olefin, wherein the reaction is carried out in the presence of a two-component catalyst system consisting of: (a) a member of the group consisting of the alkyl-halides, alkyl-derivatives and hydrides of the metals belonging to the first three groups of the Periodic System, and (b) the combination product of titanium trichloride and a chloride of another transition metal, derived from the reaction of $TiCl_4$ and a carbonyl compound of said other transition metal, finely dispersed and carried on a material of high superficial area selected from the group consisting of the chlorinated oxides of the elements belonging to the 2nd to the 4th groups of the Periodic System.

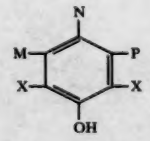
4,239,874

CYCLOPENTENE COPOLYMERIZATION PROCESS

Eilert A. Ofstead, Cuyahoga Falls, and Michael L. Senyek, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 831,202, Sep. 7, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 12,990
Int. Cl.[3] C08F *4/62, 232/00*
U.S. Cl. 526—143 3 Claims

1. A process for the preparation of substantially gel-free, rubbery copolymers of cyclopentene and dicyclopentadiene comprising polymerizing mixtures of cyclopentene and dicyclopentadiene containing from 10 to 60 percent by weight of dicyclopentadiene in an aliphatic, cycloaliphatic or aromatic solvent, and wherein the polymerization is conducted in a single stage continuous polymerization reactor in the presence of a catalyst system comprising (A) a soluble tungsten halide or oxyhalide, (B) at least one compound selected from the group consisting of trialkylaluminum compounds, dialkylaluminum halides, alkylaluminum sesquihalides and alkylaluminum dichlorides, (C) at least one hydroxy compound selected from the group consisting of aliphatic alcohols and aliphatic alcohols substituted with alkoxy or aryloxy groups, and (D) a polyhalogenated phenol of the general formula:



(D)

where X is chlorine or bromine and M, N and P are selected from the group consisting of H, Cl and Br, and wherein the molar ratio of A:B:C:D lies within the range of 1:0.5–5:0.5–2:1–3.

4,239,875

METHOD FOR PRODUCING PREPOLYMERS BASED ON VINYL MONOMERS

Irina A. Voronkova, prospekt Tsiolkovskogo, 47, kv.10, Dzerzhinsk Gorkovskoi oblasti; Tatyana I. Radbil, Kuznechikha-1, 3, kv. 8, Gorky; Nikolai A. Mikhalev, prospekt Tsiolkovskogo, 79a, kv. 64, Dzerzhinsk Gorkovskoi oblasti; Boris P. Shtarkman, prospekt Lenina, 65, kv. 63, Dzerzhinsk Gorkovskoi oblasti; Valery A. Fomin, ulitsa Pirogova, 16b, kv. 12, Dzerzhinsk Gorkovskoi oblasti, and Volf S. Etlis, prospekt Dzerzhinskogo, 4, kv. 46, Dzerzhinsk Gorkovskoi oblasti, all of U.S.S.R.

Filed Jan. 24, 1977, Ser. No. 761,899
Int. Cl.[3] C08F *2/00, 4/34, 220/14*
U.S. Cl. 526—214 7 Claims

1. A method for producing prepolymers from vinyl monomers selected from the group consisting of methacrylic acid esters, a mixture of esters of methacrylic and acrylic acids, styrene and a mixture of styrene with methacrylic acid esters, consisting of mass polymerization of vinyl monomers selected from the group consisting of methacrylic acid esters, a mixture of esters of methacrylic and acrylic acids, styrene and a mixture of styrene with methacrylic acid esters; said polymerization being conducted at a temperature 90° to 160° C. in the medium of a gas selected from the group consisting of air, oxygen-enriched air and an inert gas, in the presence of an initiating system consisting of:

(1) peresters of the general formula

$$RCOOC(CH_3)_3,$$
$$\|$$
$$O$$

where R is aryl, alkyl, isoalkyl, methyl carbitol, phenyl carbitol or benzyl carbitol in an amount of 0.05 to 3.0 wt. parts per 100 wt. parts of said vinyl monomer and

(2) the following components selected from the group consisting of:

(a) sulfur-containing organic acids with bivalent sulfur in an amount of 0.2–3.0 wt. parts per 100 wt. parts of said vinyl monomer,

(b) esters of sulfur-containing organic acids with bivalent sulfur in an amount of 0.2–3.0 wt. parts per 100 wt. parts of said vinyl monomer,

(c) a mixture of mercaptans with 4 to 20 carbon atoms in the chain and sulfur-containing organic acids in an amount of 0.3–2.5 wt. parts per 100 parts of said vinyl monomer, taken in a weight ratio of 0.1–0.5:0.2.2, respectively.

4,239,876

METHOD OF MAKING POLYMERIZABLE LIQUID MIXTURES

Peter J. Arndt, Seeheim-Jugenheim; Joachim Lowitz, Alsbach, and Franz Wenzel, Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 86,953
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848627
Int. Cl.[3] C07C *103/54*
U.S. Cl. 526—287 4 Claims

1. A method for making a liquid, directly-polymerizable mixture of acrylamide and a quaternization-product of a tertiary aminoalkyl ester or tertiary aminoalkyl amide of acrylic acid or of methacrylic acid which method comprises reacting said ester or amide with an alkylating agent in the absence of water while said ester or amide is in admixture with acrylamide such that the acrylamide is from 30 to 80 percent by weight of the mixture.

4,239,877

SOLVENTLESS SILICONE RESINS

George F. Roedel, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 873,802, Jan. 31, 1978, Pat. No. 4,160,858. This application Nov. 24, 1978, Ser. No. 963,640

Int. Cl.[3] C08G 77/06

U.S. Cl. 528—14 2 Claims

1. A silicone paint comprising a solventless silicone resin having an alkoxy content varying from 7 to 14% by weight and a viscosity at 100% solids varying from 200 to 5,000 centipoise at 25° C. comprising (a) adding to organo chlorosilanes of the formula,

$$R_aSiCl_{4-a}$$

where R is selected from the class consisting of alkyl radicals, cycloalkyl radicals, alkenyl radicals, aryl radicals and fluoroalkyl radicals all having up to 8 carbon atoms and mixtures thereof where a is 1 or 2, from 0.05 to 0.2 part of water and from 0.1 to 1 part of an aliphatic alcohol of up to 3 carbon atoms per part of organochlorosilane to form a silicone alkoxylate; (b) heating the alkoxylate to reflux (c) inserting additional amounts of said aliphatic alcohol to said alkoxylate and removing said alcohol until the acid-content of said alkoxylate is below 1000 parts per million; (d) adding an alkali metal hydroxide to said alkoxylate until its acid content does not exceed 100 parts per million (e) adding water to said alkoxylate such that the amount of water that is added from 0.2 to 0.8 moles of water per mole of hydrocarbonoxy radicals in said alkoxylate; and (f) heating said alkoxylate so as to effect the hydrolysis reaction with the additional water to obtain the desired resin product wherein in said silicone paint there is present at 100% solids the silicone resin and from 0.05 to 4.0% by weight of the silicone resin of a curing catalysts selected from the class consisting of metal salts of carboxylic acids where the metal ion varies from manganese to zinc in the Periodic Table with the exception of iron and amine functional silanes and mixtures thereof.

4,239,878

PROCESS FOR PREPARING CATIONIC ELECTRODEPOSITION-COATING RESIN USING MONOFUNCTIONAL BLOCKING AGENTS AND TERTIARY AMINES HAVING AT LEAST TWO HYDROXY GROUPS

Yoshimichi Kobayashi, Yokohama; Yukio Tsuge, Kawasaki, and Susumu Hirako, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed May 10, 1979, Ser. No. 37,891

Claims priority, application Japan, May 26, 1978, 53/63138

Int. Cl.[3] C08G 18/12, 18/80

U.S. Cl. 528—45 11 Claims

1. A process for preparing a cationic electrodeposition-coating resin, which comprises:

reacting a polyisocyanate with a polyol and a monofunctional blocking agent in relative amounts such that the molar quantity of isocyanate groups of polyisocyanate is in excess of the total molar amount of hydroxyl groups in said polyol and reactive functional groups in said monofunctional blocking agent thereby synthesizing an intermediate which contains said excess of isocyanate groups;

reacting a tertiary amine having at least two hydroxyl groups with said intermediate in amounts such that there is at least a 1:1 molar correspondance of hydroxyl groups relative to the free isocyanate groups in said intermediate; and

reacting the tertiary amine groups in the reaction product of said intermediate and said tertiary amine with an acid to form amine salt groups.

4,239,879

THERMOPLASTIC POLYURETHANE PREPARED FROM A POLY-1,2-PROPYLENE ETHER GLYCOL, A LOW MOLECULAR WEIGHT GLYCOL AND 2,4-TOLYLENE DIISOCYANATE

Hubert J. Fabris; Robert J. Herold, both of Akron, and Arden E. Schmucker, Alliance, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Jun. 25, 1979, Ser. No. 51,788

Int. Cl.[3] C08G 18/48

U.S. Cl. 528—76 5 Claims

1. A thermoplastic, linear and segmented poly-1,2-propylene ether urethane consisting essentially of the reaction product of (1) tolylene diisocyanate comprising from about 55% to 100% by weight of 2,4-tolylene diisocyanate and the balance 2,6-tolylene diisocyanate, (2) a glycol selected from the group consisting of ethylene glycol, 2,3-butane diol and neopentyl glycol and mixtures thereof and (3) a poly-1,2-propylene ether glycol having an average molecular weight of from 3,300 to 14,000, the equivalent ratio of the diisocyanate to the glycols being from about 0.98 to 1.08:1, the weight ratio of the urethane segments (tolylene diisocyanate plus ethylene glycol, 2,3-butane diol and/or neopentyl glycol) to poly-1,2-propylene ether segments being from about 0.4:1.0 to 1.5:1.0, the glass transition temperature of the poly-1,2-propylene ether segments of the polyurethane being below about −30° C., the poly-1,2-propylene ether glycol having been made by the reaction of propylene oxide with a low molecular weight aliphatic glycol using a polymerization catalyst of the double metal cyanide complex class and the polyurethane having a 100% modulus of at least about 400 p.s.i.

4,239,880

AROMATIC DIAMINES AND THEIR USE AS POLYCONDENSATION COMPONENTS FOR THE MANUFACTURE OF POLYAMIDE, POLYAMIDE-IMIDE AND POLYIMIDE POLYMERS

Roland Darms, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

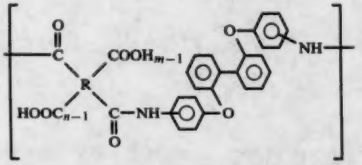
Division of Ser. No. 963,058, Nov. 22, 1978, Pat. No. 4,196,144, which is a continuation of Ser. No. 802,922, Jun. 2, 1977, abandoned. This application Jul. 17, 1979, Ser. No. 58,340

Claims priority, application Switzerland, Jun. 15, 1976, 7593/76

Int. Cl.[3] C07C 79/10, 93/06; C08G 8/02

U.S. Cl. 528—125 7 Claims

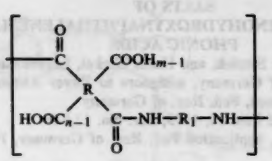
1. A polyamide, a polyamide-amide-acid or a polyamide-acid which consists of 1 to 100 mol% of structural elements of the formula VI



(VI)

and of 0 to 99 mol% of structural elements of the formula VII

(VII)



in which the NH groups in formula VI independently of one another are bonded to the benzene nucleus in the o-, m- or p-position and the individual m, n, R and R_1 independently of one another have the following meanings: m and n denote the number 1 or 2, R denotes an aliphatic radical with at least two carbon atoms or a cycloaliphatic, carbocyclic-aromatic or heterocyclic-aromatic radical, the carbonamide groups and carboxyl groups being bonded to different carbon atoms and, if R denotes a cyclic radical and at least one of m and n denotes the number 2, the carboxyl groups each being in the ortho-position relative to a carbonamide group, and R_1 denotes an aliphatic radical with at least two carbon atoms or a cycloaliphatic, araliphatic, carbocyclic-aromatic or heterocyclic-aromatic radical, and also the corresponding derivative which has been cyclised to the imide.

4,239,881

PHENAL-UREA-FORMALDEHYDE CONDENSATION PRODUCT

Walter Hasselman, Jr., Scarsdale, N.Y., assignor to C.P. Chemical Company, Inc., White Plains, N.Y.

Continuation of Ser. No. 497,738, Aug. 15, 1974, abandoned. This application Dec. 27, 1978, Ser. No. 973,683

Int. Cl.³ C08J 9/30

U.S. Cl. 528—164 **3 Claims**

1. A composition for the preparation of foamed structures by frothing with a aqueous surfactant-hardener solution comprising a phenol-urea-formaldehyde condensation product in which the phenol is present in the amount of from about 1 to about 20 percent by weight, the urea is present in the amount of from about 23 to about 48 percent by weight and the formaldehyde is present in the amount of from about 42 to about 70 percent by weight, the ratio of formaldehyde to urea being in the range of from about 1 to about 3 parts formaldehyde to about 1 part urea, said condensation product having a viscosity at room temperature in the range of about 30 to about 36 seconds on a No. 1 Zahn cup and a pH maintained in the range of from about 6 to about 8.

4,239,882

PROCESS FOR PRODUCING POLYESTER

Tsuneo Kimura; Katsuhisa Kohyama; Takehiro Okada, and Katsuyuki Sakata, all of Kita-Kyushu, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Sep. 3, 1975, Ser. No. 609,964

Claims priority, application Japan, Sep. 3, 1974, 49-10117

Int. Cl.³ C08G 17/013

U.S. Cl. 528—209 **7 Claims**

1. In a process for producing a polyester by esterification or interesterification of an aromatic dicarboxylic acid or an alkyl ester thereof with 1,4-butanediol followed by polycondensation of the resulting ester, an improvement comprising reusing the mixture of water, tetrahydrofuran and 1,4-butanediol distilled from the polycondensation step without purification as a starting material for production of more polyester.

4,239,883

POLYIMIDE PREPARATION FROM IMIDO ACYL HALIDE

Horst Stenzenberger, Dossenheim, Fed. Rep. of Germany, assignor to Technochemie GmbH Verfahrenstechnik, Heidelberg, Fed. Rep. of Germany

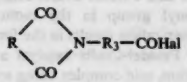
Filed Jul. 8, 1976, Ser. No. 703,548

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1975, 2530571

Int. Cl.³ C08G 69/26, 73/10

U.S. Cl. 528—322 **17 Claims**

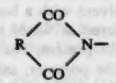
1. In a process of producing a polyimide prepolymer, the step which comprises reacting a difunctional amine with an acid halide of the formula



in which

Hal is halogen,

the group of the formula



is an unsaturated dicarboxylic acid imido group, and

the group of the formula —R_3—CO— is an acyl group attached to the imido nitrogen atom,

to yield a polyimide prepolymer convertible by heating into a macromolecular polyimide.

4,239,884

PROCESS FOR ISOLATION OF SOLID POLYMERS

Klaus J. Dahl, Atherton, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Aug. 11, 1975, Ser. No. 603,635

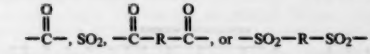
Int. Cl.³ C08G 33/10

U.S. Cl. 528—486 **12 Claims**

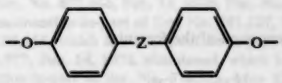
1. In a Friedel-Crafts catalyzed polymerization reaction for the preparation of a crystalline polymer, said reaction being selected from the group consisting of

$$n(X—A—X)+n(H—B—H)\rightarrow 2n-1HX+X(AB)_nH$$

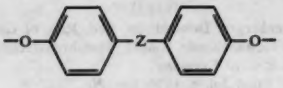
wherein A is



and wherein X is halogen, hydroxy, or alkoxy; and wherein R is alkylene, aryl substituted alkylene, arylene or substituted arylene, or polynuclear aromatic either fused ring or joined by one or more bridging groups such as oxygen, sulfur or a moiety of the structure



wherein Z is propylidene, CO, SO_2, or a chemical bond and wherein B is arylene or substructured arylene, or a polynuclear aromatic, either fused ring or joined by one or more bridging groups such as CO, oxygen, sulfur or a moiety of the structure



wherein Z is as defined above, and wherein n is the degree of polymerization and is at least about 5 and

$$n(XDH) \rightarrow_{n-1} HX + X(D)_nH$$

wherein X is as defined above and wherein D is CO—B— or —SO_2B— wherein B is as defined above, wherein at least one molar equivalent of said Friedel-Crafts catalyst is present per carbonyl or sulfonyl group in the monomeric reactants, wherein said polymerization results in the formation of a complex between said Friedel-Crafts catalyst and polymer produced by said reaction, said complex being soluble in the polymerization medium, and wherein said polymerization reaction is carried out in a solvent, said solvent being present in an amount at least sufficient to dissolve the monomeric species present at the start of said polymerization, the improvement comprising treating said reaction mixture comprising polymer-catalyst complex and solvent with a base having a pK_a of at least about 4.5 as measured in water in an amount at least equimolar to the catalyst present, but less than an amount which will precipitate the polymer, said base being at least partially soluble in said reaction solvent, being stable in said polymerization reaction medium and not forming a stable adduct with said polymer products to thereby decompose said polymer-catalyst complex and form a base-catalyst complex, admixing the base treated reaction mixture with a material which is a non-solvent for the polymer and the base-catalyst complex but which is mixable with the reaction solvent to thereby precipitate the polymer and base-catalyst complex, removing the reaction solvent from the base treated reaction mixture, and separating the precipitated polymer from the precipitated base-catalyst complex.

4,239,885

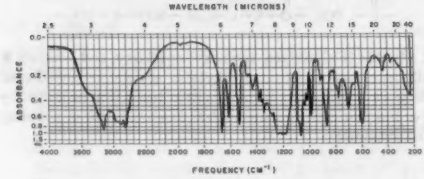
PROCESS FOR THE PREPARATION OF DIACETONE ACRYLAMIDE

Henry Richmond, White House Station, N.J., assignor to American Cyanamid Company, Stamford, Conn.

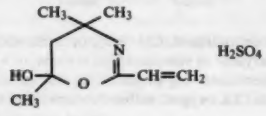
Continuation-in-part of Ser. No. 859,623, Dec. 12, 1977, abandoned. This application Jun. 28, 1978, Ser. No. 920,040

Int. Cl.[3] **C07D** *413/12;* **C07C** *97/16*

U.S. Cl. 544—97 **1 Claim**



1. The compound of the formula:



4,239,886

SALTS OF N-ACYLAMINOHYDROXYNAPHTHALENESULPHONIC ACIDS

Peter Wild, Alten Buseck, and Horst Nickel, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

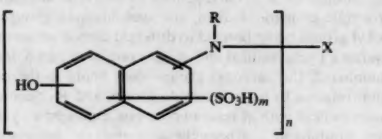
Filed Feb. 16, 1979, Ser. No. 12,946

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2806951

Int. Cl.[3] **C07D** *265/30;* **C07C** *93/04;* **C07D** *295/08*

U.S. Cl. 544—170 **7 Claims**

1. Salts of N-acylaminohydroxynaphthalenesulphonic acids which, in the form of the free acid, correspond to the formula


(I)

wherein

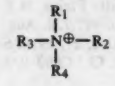
R denotes hydrogen or alkyl,

X denotes the radical of a monovalent or divalent acyl group,

m denotes 1 or 2 and

n denotes 1 or 2,

and wherein at least one of the sulphonic acid groups contains, as a cation, a cation of the formula

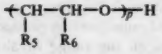


wherein

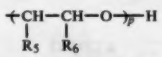
R_1 and R_2 independently of one another denote C_1–C_4-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl or R_3, or

R_1 and R_2, together with the nitrogen atom, denote piperidinyl, morpholinyl or pyrrolinyl,

R_3 denotes the group



R_4 denotes hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl or the group



R_5 and R_6 denote hydrogen, methyl or ethyl and p represents an integer between 1 and 10.

4,239,887

PYRIDOTHIENOTRIAZINES

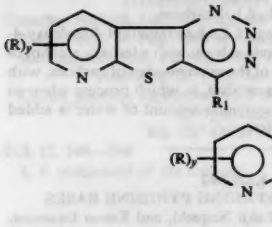
Raymond D. Youssefyeh, Tarrytown, N.Y., and Jeffrey D. Wilson, Durham, N.C., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,853

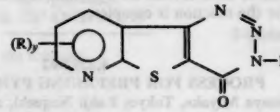
Int. Cl.[3] **C07D** *513/14*

U.S. Cl. 544—184 **26 Claims**

1. A compound of the formula



and



wherein R and R_1 are independently hydrogen, alkyl, alkenyl, alkynyl, aryl, aralkyl, halogen, alkoxy, alkenyloxy, alkynyloxy, alkylamino, alkanoylamino, carbalkoxy, carbalkoxyamino, alkanoyloxy or trihaloalkyl; y is an integer from 1 to 3; and R_2 is alkyl, alkenyl, alkynyl, aryl, aralkyl, alkanoyl or carbalkoxy; wherein the alkyl, alkenyl, alkynyl, alkoxy, alkanoyl and carbalkoxy groups contain up to 7 carbon atoms and the aryl and aralkyl groups contain up to 10 carbon atoms, with the proviso that when R_1 is hydroxy, R is not hydrogen.

4,239,888

1-PHENYLURACILS

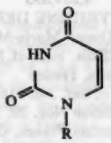
Max W. Miller, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,407

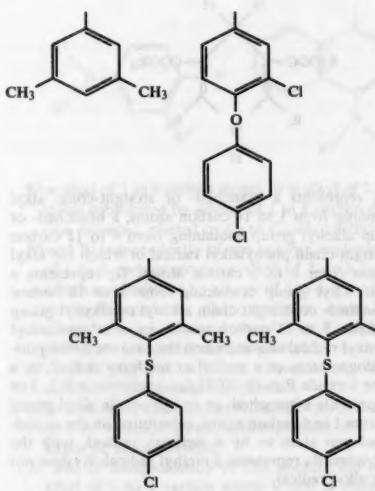
Int. Cl.[2] C07D *239/54*

U.S. Cl. 544—309 **2 Claims**

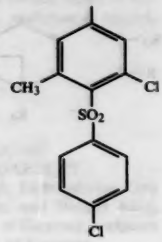
1. A compound of the formula



wherein R is



-continued



4,239,889

3-(N-HETEROCYCLYL)ISOXAZOLIDINE FUNGICIDES

Pieter ten Haken, Eastling, and Shirley B. Webb, Sheldwich, near Faversham, both of England, assignors to Shell Oil Company, Houston, Tex.

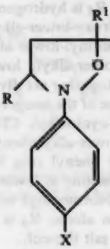
Filed Jun. 14, 1979, Ser. No. 48,424

Claims priority, application United Kingdom, Jun. 27, 1978, 27979/78

Int. Cl.[3] C07D *413/04*

U.S. Cl. 544—335 **4 Claims**

1. A compound of the formula



wherein R is 2-pyrazinyl or 5-pyrimidinyl, X is chlorine or fluorine, and

(a) R^1 is hydrogen and R^2 is alkoxy of one or two carbon atoms, or

(b) R^1 and R^2 each is methyl.

4,239,890

OCTAHYDRO-3,5-ETHENO- AND 3,5-ETHANOBENZO[G]QUINOLINES

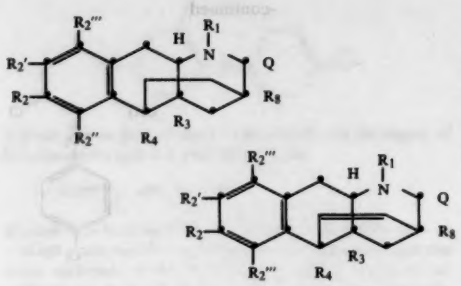
William F. Michne, Poestenkill, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 877,166, Feb. 13, 1978, Pat. No. 4,180,667, which is a continuation-in-part of Ser. No. 741,227, Nov., 1976, Pat. No. 4,100,164, which is a continuation-in-part of Ser. No. 695,977, Jun. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 576,313, May 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 471,571, May 20, 1974, Pat. No. 3,932,422. This application Feb. 5, 1979, Ser. No. 9,483

Int. Cl.[3] C07D *215/14*

U.S. Cl. 546—74 **23 Claims**

1. A compound having one of the formulas



where R_1 is hydrogen, lower-alkyl, lower-alkanoyl (only when R_4 is hydrogen), lower-alkenyl, lower-alkynyl, halo-lower-alkenyl, cycloalkyl, cycloalkyl-lower-alkyl, 2- or 3-furylmethyl, or such 2- or 3-furylmethyl substituted on the unsubstituted ring carbon atoms by from one to three methyl groups, phenyl-lower-alkyl, or phenyl-lower-alkyl substituted in the phenyl ring by from one to two members of the group consisting of halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkylmercapto, trifluoromethyl, amino, lower-alkanoylamino or a single methylenedioxy attached to adjacent carbon atoms; R_2, R_2', R_2'' and R_2''' are each hydrogen, or three of them are hydrogen and the fourth is halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkylmercapto, trifluoromethyl, nitro, amino, lower-alkanoylamino, lower-alkoxycarbonylamino or phenyl, or two of the adjacent such groups together are methylenedioxy; R_3 is hydrogen or lower-alkyl; R_4 is hydrogen, lower-alkyl, lower-alkoxy-lower-alkyl, hydroxy-lower-alkyl, lower-alkylthio-lower-alkyl, lower-alkylsulfinyl-lower-alkyl, phenylthio-lower-alkyl, phenylsulfinyl-lower-alkyl, lower-alkenyl or halo-lower-alkyl, or R_3 and R_4 together are divalent lower-alkylene, $-(CH_2)_n-$, where n is one of the integers 3 or 4; and Q is oxo, H_2, CH-lower-alkyl, CH-cycloalkyl, CH-lower-alkylcycloalkyl, CH-phenyl or CH-lower-alkylphenyl, or the latter two groups substituted in the phenyl ring by from one to two members of the group consisting of lower-alkyl, lower-alkoxy, lower-alkylmercapto, trifluoromethyl or methylenedioxy attached to adjacent carbon atoms; R_8 is hydrogen or lower-alkyl; or an acid addition salt thereof.

4,239,891

SUBSTITUTED PIPERIDINE HYDROXAMIDES, THEIR PREPARATION, AND THEIR USE AS LIGHT STABILIZERS

Hartmut Wiezer, Gersthofen; Gerhard Pfahler, Augsburg, and Norbert Mayer, Gersthofen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

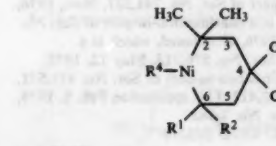
Filed Sep. 18, 1978, Ser. No. 942,991

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742582

Int. Cl.³ C07D *211/48*; C08K *5/34*

U.S. Cl. 546—242 **1 Claim**

1. A process for the preparation of piperidine hydroxyamides of the formula



in which

R^1 and R^2 are methyl;

R^3 is tertiary alkyl of 4–8 carbons; and

R^4 is hydrogen or alkyl of 1–4 carbons,

which comprises reacting 2,2,6,6-tetramethyl-4-hydroxy-4-cyanopiperidine in an organic solvent with a tertiary alcohol of 4 to 8 carbons or an olefin of the same number of carbons, with addition of sulfuric acid as catalyst, in which process when an olefin is used at least an equimolar amount of water is added after the reaction is complete.

4,239,892

PROCESS FOR PREPARING PYRIDINE BASES

Tetsuya Miyake, Tokyo; Kohji Noguchi, and Kazuo Imamura, both of Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 841,083, Oct. 11, 1977, Pat. No. 4,179,576. This application Jul. 27, 1979, Ser. No. 61,335

Claims priority, application Japan, Oct. 27, 1976, 51-128192; Oct. 27, 1976, 51-128194; Oct. 27, 1976, 51-128195

Int. Cl.³ C07D *213/10*

U.S. Cl. 546—251 **12 Claims**

1. A process for preparing pyridine bases from acetaldehyde and ammonia by gas phase catalytic reaction, wherein the gas phase catalytic reaction is carried out at a temperature of 300° to 550° C. and at a space velocity of 200 to 10,000 hr^{-1} in the presence of a catalyst prepared by subjecting silica-alumina to ion exchange with ions of a member selected from the group consisting of manganese, nickel, iron, cobalt, silver, copper and silver plus sodium to adsorb the ions on said silica-alumina wherein the silica/alumina weight ratio is in the range of from 98/2 to 50/50 and wherein the catalyst contains the ions in an amount of 0.01 to 1.2 milliequivalents per gram of silica-alumina.

4,239,893

DIHYDROPYRIDINE DERIVATIVES

Charles Pigerol, Saint-Ouen; Marie-Madeleine Chandavoine, and Paul de C. de Fillain, both of Sisteron, all of France, assignors to Labaz, Paris, France

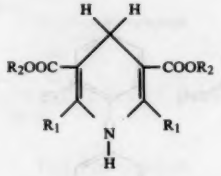
Continuation-in-part of Ser. No. 918,065, Jun. 22, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 96,189

Claims priority, application France, Oct. 14, 1977, 77 30992

Int. Cl.³ C07D *213/55*

U.S. Cl. 546—321 **12 Claims**

1. A compound of the general formula:



wherein R_1 represents a branched- or straight-chain alkyl group containing from 1 to 16 carbon atoms, a branched- or straight-chain alkenyl group containing from 4 to 12 carbon atoms, a straight-chain phenylalkyl radical in which the alkyl chain contains from 1 to 6 carbon atoms, R_2 represents a straight-chain alkyl group containing from 1 to 18 carbon atoms, a branched- or straight-chain alkenyl or alkynyl group containing from 3 to 11 carbon atoms, an ω-halogenoethyl radical, a benzyl radical substituted on the para- or ortho-position by a halogen atom or a methyl or methoxy radical, or a radical of the formula $R_4—O—(CH_2)_n—$, wherein n is 2, 3 or 4 and R_4 represents a branched- or straight-chain alkyl group containing from 1 to 4 carbon atoms, substituted on the ω-position by a halogen atom or by a methoxy radical, with the proviso that when R_1 represents a methyl radical, R_2 does not represent an alkyl radical.

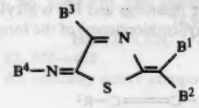
4,239,894

THIAZOLE DERIVATIVES

Guenther Seybold, Ludwigshafen, and Heinz Ellingsfeld, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,638
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732221
Int. Cl.³ C07D 277/20
U.S. Cl. 548—194 5 Claims

1. A compound of the formula

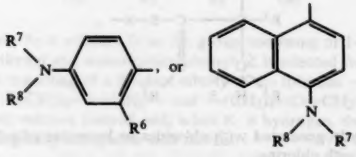


where

B^1 and B^2 are cyano, alkanoyl of 1 to 4 carbon atoms, benzoyl which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms or by alkoxy of 1 to 4 carbon atoms, $COOB^5$ or

B^3 is phenyl which is unsubstituted or is monosubstituted or polysubstituted by chlorine, bromine, alkoxy of 1 to 8 carbon atoms, alkyl of 1 to 8 carbon atoms, phenoxy, alkylmercapto of 1 to 4 carbon atoms, phenylmercapto, β-cyanoethoxy, β-C_1- to C_4-alkoxycarbonyl-ethoxy or β-cyanoethylthio, or is thienyl,

B^4 is a radical of the formula



B^5 is alkyl of 1 to 8 carbon atoms, or is alkyl of 2 or 3 carbon atoms substituted by alkoxy of 1 to 8 carbon atoms, chlorine, bromine, phenyl or C_1 to C_4-alkoxyethoxy,

B^6 and B^7 independently of one another are hydrogen, alkyl of 1 to 8 carbon atoms or alkyl of 2 or 3 carbon atoms which is substituted by alkoxy of 1 to 4 carbon atoms, C_1- to C_4-alkoxyethoxy, phenoxyethoxy, cyano, C_1 to C_4-alkoxycarbonyl, alkanoyloxy of 1 to 4 carbon atoms or phenyl, or are cyclohexyl or phenyl,

B^6 and B^7 together with the nitrogen may also be pyrrolidino, piperidino or morpholino,

R^6 is hydrogen, chlorine, bromine, methyl, hydroxyl, alkoxy of 1 to 4 carbon atoms, alkanoylamino of 1 to 4 carbon atoms or benzoylamino,

R^7 and R^8 independently of one another are hydrogen or alkyl of 1 to 5 carbon atoms which is unsubstituted or substituted by hydroxyl, chlorine, cyano, alkoxy of 1 to 4 carbon atoms, alkanoyloxy of 1 to 4 carbon atoms or C_1- to C_4-alkoxycarbonyl, or are allyl, cyclohexyl, benzyl, phenylethyl or phenyl.

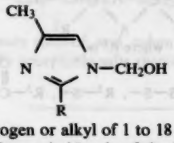
4,239,895

PROCESS FOR PRODUCING 1-HYDROXYMETHYLIMIDAZOLES

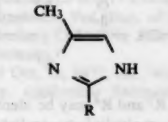
Toni Dockner, Meckenheim; Anton Frank, Ludwigshafen; Uwe Kempe, Heidelberg; Matthias Wetzler, and Helmut Karn, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 3,966, Jan. 16, 1979, abandoned. This application Aug. 8, 1979, Ser. No. 64,860
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825547
Int. Cl.³ C07D 233/60
U.S. Cl. 548—341 6 Claims

1. A process for the preparation of a compound of the formula 1



where R is hydrogen or alkyl of 1 to 18 carbon atoms, which comprises: reacting an imidazole of the formula 2



where R has the meanings given above, with paraformaldehyde or trioxane, at from 40° to 150° C.

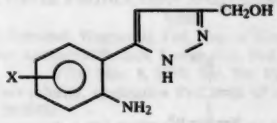
4,239,896

5-(OPTIONALLY SUBSTITUTED 2-AMINOPHENYL)-1H-PYRAZOLE-3-METHANOL

B. Richard Vogt, Yardley, Pa., and Ligaya M. Simpkins, Allentown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 969,642, Dec. 13, 1978, Pat. No. 4,198,412. This application Oct. 18, 1979, Ser. No. 86,236
Int. Cl.³ C07D 231/12
U.S. Cl. 548—378 2 Claims

1. A compound of the formula



wherein X is hydrogen, lower alkyl, lower alkoxy, halogen or trifluoromethyl.

4,239,897

THIOPHENE COMPOUNDS AND THEIR MANUFACTURE

Phillip Rossy, Ludwigshafen, and Werner Hoffmann, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

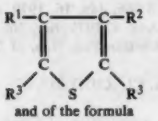
Continuation of Ser. No. 784,571, Apr. 4, 1977, abandoned. This application Sep. 15, 1978, Ser. No. 942,655

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615885; Jan. 3, 1977, 2700215; Jan. 3, 1977, 2700262

Int. Cl.[3] **C07D** *333/00, 333/18*

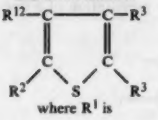
U.S. Cl. 549—61 **9 Claims**

1. A process for the manufacture of thiophene compounds of the formula



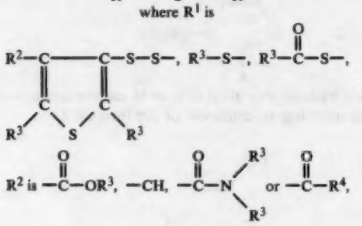
I

and of the formula

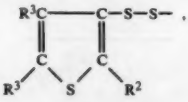


Ia

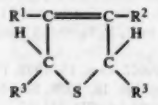
where R^1 is



the individual radicals R^3 and R^4 may be identical or different and each is an aliphatic, cycloaliphatic, araliphatic or aromatic radical, and R^3 may also be hydrogen, R^{12} has the meanings of R^1 or is



wherein dihydrothiophenes of the formula

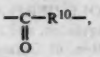


II

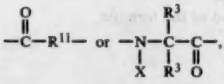
where R^1, R^2 and R^3 have the above meanings, are dehydrogenated with chlorides or bromides of phosphoric acid or sulfuric acid, with chlorine, bromine or iodine, or with N-halogen compounds of the formula

IV

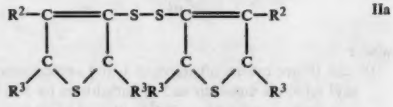
where X is chlorine or bromine, R^9 is hydrogen or



the individual radicals R^{10} may be identical or different and each is an aliphatic, araliphatic or aromatic radical, the two radicals R^{10} may also together be

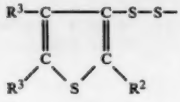


where R^3 and X have the above meanings and R^{11} is alkylene, or when disulfide-(3,3')-bis-(dihydrothiophenes) of the formula

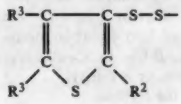


IIa

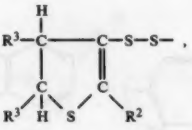
where R^2 and R^3 have the above meanings, or dihydrothiophenes of the formula



where R^{13} has the meanings of R^{12} or, if R^{12} is



R^{13} may also be



are dehydrogenated with chlorides or bromides of sulfuric acid or with chlorine.

4,239,898

NOVEL 4-(SUBSTITUTED-AMINOPHENOXY)-3-THIOPHENEMETHANOLS

Jeffery B. Press, Tuxedo, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 11, 1980, Ser. No. 120,198

Int. Cl.[3] **C07D** *333/16;* **A01K** *31/38*

U.S. Cl. 549—65 **4 Claims**

1. The compound 4-(o-methylaminophenoxy)-3-thiophenemethanol.

2. The compound 4-[2-(methlamino)-p-tolyloxy]-3-thiophenemethanol.

3. The compound N-ethyl-6'-[4-(hydroxymethyl)-3-thienyloxy]-m-acetotoluidide.

4. The compound 4-(2-dimethylamino-p-tolyloxy)-3-thiophenemethanol hydrochloride.

4,239,899

VARIOUS 15-DEOXY-16-HYDROXY-16-ETHYNYL AND 16-ETHYNYLSUBSTITUTED PROSTAGLANDINS

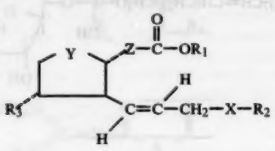
Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Nyack, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 857,714, Dec. 5, 1977, Pat. No. 4,191,699, which is a continuation-in-part of Ser. No. 706,343, Jul. 19, 1976, Pat. No. 4,061,670. This application Sep. 13, 1979, Ser. No. 74,941

Int. Cl.[3] C07C *177/00*; C07F *7/08*

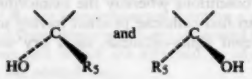
U.S. Cl. 556—438 35 Claims

1. An optically active compound of the formula:



wherein Y is a divalent moiety of the formula:

R_1 is selected from the group consisting of hydrogen and C_1 to C_6 alkyl; R_2 is selected from the group consisting of C_3 to C_7 alkyl; R_3 is selected from the group consisting of hydrogen and hydroxy; X is selected from the group consisting of a divalent moiety of the formula:



wherein R_5 is selected from the group consisting of 1-propynyl, ethynyl and trimethylsilylethynyl; Z is selected from the group consisting of a divalent moiety of the formula: $-(CH_2)_6-$, $-(CH_2)_4-S-CH_2-$ and $-(CH_2)_4-O-CH_2-$; the racemic mixture thereof; and, when R_1 is hydrogen, the pharmacologically acceptable salts thereof.

4,239,900

VARIOUS 15-DEOXY-16-HYDROXY-16-ETHYNYL AND 16-ETHYNYLSUBSTITUTED PROSTAGLANDINS

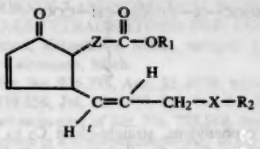
Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Nyack, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 857,849, Dec. 5, 1977, Pat. No. 4,190,597, which is a continuation-in-part of Ser. No. 706,343, Jul. 19, 1976, Pat. No. 4,061,670. This application Sep. 13, 1979, Ser. No. 74,942

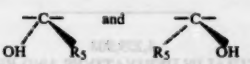
Int. Cl.[3] C07C *177/00*

U.S. Cl. 556—438 21 Claims

1. An optically active compound of the formula:



wherein R_1 is selected from the group consisting of hydrogen and C_1 to C_6 alkyl; R_2 is selected from the group consisting of C_3 to C_7 alkyl; X is selected from the group consisting of a divalent moiety of the formula:



wherein R_5 is selected from the group consisting of ethynyl, 2-propynyl and trimethylsilylethynyl; Z is

cis

$$-CH_2-CH=CH-(CH_2)_3-;$$

the racemic mixture thereof; and, when R_1 is hydrogen, the pharmacologically acceptable salts thereof.

4,239,901

PYRAZOL-1-YLPHENYLACETIC ACIDS

Georg Rainer, Constance, Fed. Rep. of Germany, assignor to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

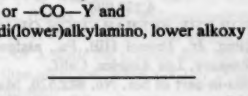
Filed Oct. 12, 1977, Ser. No. 841,382

Claims priority, application Switzerland, Oct. 14, 1976, 13138/76

Int. Cl.[3] C07C *109/10*; C07D *231/10*

U.S. Cl. 560—34 13 Claims

1. A compound of the formula



wherein

R^2 is a halo,

R^4 is —H or lower alkyl,

W is —CN or —CO—Y and

Y is —OH, di(lower)alkylamino, lower alkoxy or benzyloxy.

4,239,902

N-CARBOXYACYLAMINOACID ESTERS, PROCESSES FOR THEIR PRODUCTION AND THEIR DIAGNOSTIC USE

Eugen Schnabel, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

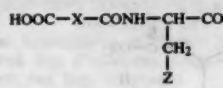
Filed Mar. 8, 1979, Ser. No. 18,701

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1978, 2815555

Int. Cl.[3] C07C *101/08*; G01N *31/00*

U.S. Cl. 560—41 6 Claims

1. A compound of the formula



(I)

in which

X denotes o-phenylene, straight-chain C_2 to C_4 alkylene, straight-chain, C_2 to C_4 alkylene or C_2 to C_4 alkenylene substituted by C_1 to C_4 alkyl,

Y denotes α-naphthyl, β-naphthyl, phenyl or 4-nitrophenyl and

Z denotes phenyl, indolyl, or phenyl or indolyl substituted by hydroxyl.

4,239,903

2-AMINOTETRALIN DERIVATIVES AND PROCESS FOR PRODUCING THE SAME

Sumiro Isoda; Munefumi Kanao; Yoshifumi Ichikawa; Takeshi Hashizume; Kiyoshi Irie, and Yoshio Kasai, all of Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

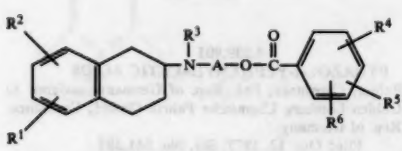
Filed May 16, 1978, Ser. No. 906,510

Claims priority, application Japan, May 17, 1977, 52/56837

Int. Cl.³ C07C *69/84*

U.S. Cl. 560—73 **12 Claims**

1. A compound represented by the following general formula (I)



(I)

wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom, an alkoxy group or, when taken together, R^1 and R^2 represent an alkylenedioxy group; R^3 represents an alkyl group or a cycloalkyl group, R^4, R^5 and R^6, which may be the same or different, each represents a hydrogen atom, an alkoxy group, an alkyl group, a halogen atom, a hydroxyl group or, when two of R^4, R^5 and R^6 are taken together, they represent an alkylenedioxy group; and A represents a straight or branched chain alkylene group having 2 to 10 carbon atoms or an alkylene group having 2 to 10 carbon and interrupted with an oxygen atom forming an ether bond therein, and the therapeutically useful acid-addition salts thereof.

4,239,904

PROCESS FOR THE PREPARATION OF URETHANES

Haven S. Kesling, Jr., Drexel Hill, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 882,520, Mar. 1, 1978, abandoned, which is a continuation of Ser. No. 754,150, Dec. 27, 1976, abandoned. This application Jun. 6, 1979, Ser. No. 45,882

Int. Cl.³ C07C *125/065*

U.S. Cl. 560—157 **16 Claims**

1. A process for the preparation of urethanes which comprises reacting, at a temperature of about 60° to 300° C. and a pressure of about 1 to 700 atmospheres a tertiary aliphatic or cycloaliphatic amine, an alcohol and carbon monoxide in the presence of a salt selected from copper I salts, copper II salts and mixtures of these, oxygen or an oxygen-containing gas mixture present in an amount less than the minimum amount necessary to form an explosive mixture of carbon monoxide and oxygen and a dehydrating agent.

4,239,905

1-β-D-ARABINOFURANOSYLCYTOSINE-5'-OLEYL PHOSPHATE AND SALTS THEREOF

Kenjiro Kodama, and Manami Morozumi, both of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Choshi and Mineo Saneyoshi, Sapporo, both of, Japan

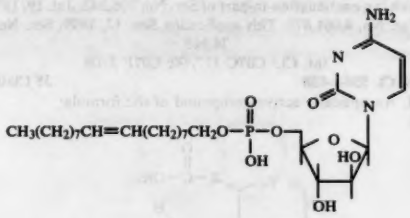
Filed Jun. 18, 1979, Ser. No. 49,636

Claims priority, application Japan, Jun. 20, 1978, 53-73699

Int. Cl.³ C07H *17/00, 15/12*

U.S. Cl. 536—29 **2 Claims**

1. 1-β-D-Arabinofuranosylcytosine-5'-oleyl phosphate or a pharmaceutically-acceptable salt thereof, said phosphate being represented by the structural formula.



4,239,906

METHOD FOR OBTAINING A PURIFIED CELLULOSE PRODUCT FROM CORN HULLS

Richard L. Antrim; Yuk-Charn Chan, both of Clinton; John R. Crary, Jr., and Donald W. Harris, both of Camanche, all of Iowa, assignors to Standard Brands Incorporated, Wilton, Conn.

Filed Jun. 7, 1979, Ser. No. 46,584

Int. Cl.³ C08B *1/00, 37/14*

U.S. Cl. 536—56 **14 Claims**

1. In a method for treating corn hulls whereby the corn hulls are treated to solubilize non-carbohydrate material and to provide an impure cellulose product containing hemicellulose, the improvement comprising treating said cellulose product under acidic conditions whereby the hemicellulose is solubilized and a purified cellulose product having present at least about 70 percent alpha-cellulose, on a dry weight basis, is obtained.

4,239,907

PREPARATION OF LOW VISCOSITY POLYETHER POLYOLS

William C. Bedoit, Jr., 2305 Stannye Dr., Louisville, Ky. 40222

Filed Jan. 15, 1979, Ser. No. 3,236

Int. Cl.³ C07C *41/00*; C07H *15/04*

U.S. Cl. 536—120 **19 Claims**

1. In a process for preparing a polyether polyol which comprises reacting a polyhydric water-soluble initiator with ethylene oxide and an alkylene oxide in the presence of ammonia or an alkanolamine or a primary alkylamine or alkylene diamine, the improvement which comprises:

mixing and reacting the water-soluble polyhydric initiator and ammonia or alkanolamine, having two to four carbon atoms, or primary mono alkylamine having two to four carbon atoms, or diprimary amine having three to about six carbon atoms, or alkylene diamine having from two to six carbon atoms, in the presence of added water with ethylene oxide and the alkylene oxide at an elevated temperature not greater than about 110° C. in the absence of an added alkoxylation catalyst.

4,239,908

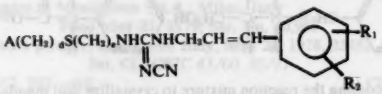
N-ARALKENYL-N'-CYANO-N''-(HETEROCYCLYLTHIOALKYL)-GUANIDINES

Gilbert W. Adelstein, Evanston, Ill., assignor to G.D. Searle & Co., Skokie, Ill.

Filed Dec. 10, 1979, Ser. No. 101,923
Int. Cl.³ C07D 263/34, 233/54, 277/26, 307/38
U.S. Cl. 542—416 16 Claims

Please amend the above-identified application as follows:

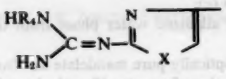
Claim 1 (Amended) A compound of the formula



or [its] *a* pharmacologically acceptable salt *thereof* [;], wherein A is of the formula:

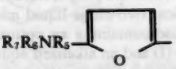
1.

2.



or

3.



wherein R_1 and R_2 can be the same or different and each represents hydrogen, halogen, hydroxy, trifluoromethyl, alkoxy containing 1 to 7 carbon atoms and either unsubstituted or substituted by aryl or cycloalkyl, or amino either unsubstituted or substituted with at least one acyl or alkyl, each containing 1 to 7 carbon atoms, the alkyl being unsubstituted or substituted by aryl or cycloalkyl; or R_1 and R_2 are interconnected forming a group having terminal oxygen atoms which are separated by methylene or ethylene and which are attached to adjacent carbon atoms on the phenyl ring;

X represents —O—, —S—, or —N—;

R_3 represtns hydrogen, halogen or alkyl containing 1 to 7 carbon atoms:

R_4 represents hydrogen or alkyl contining 1 to 7 carbon atoms when X is —S— or —N— and represents hydrogen when S is O;

R_5 is alkylene of 1 to 6 carbon atoms;

R_6 and R_7 can be the same or different and each represents hydrogen, cycloalkyl or alkyl, each containing 1 to 7 carbon atoms, the alkyl either unsubstituted or substituted by aryl; or R_6 and R_7 are interconnected forming with the nitrogen atom in formula 3 a 5- or 6- membered ring which can include oxygen; and

d is 0, 1 or 2 and e is 2 or 3 when A is of formula 1 or 3; d is 1 or 2 and e is 2 or 3 when A is of formula 2 and X is —S— or —N—; d is 1 land e is 2 when A is of formula 2 land X is —O—; and the sum of d and e is 3 or 4.

16. The compound of claim **1** being N-cyano-N'-[2-(((5-methyl-1H-imidazol-4-yl)methyl)thio)ethyl]-N''-(3-phenyl-2-propen-1-yl)guanidine hydrochloride.

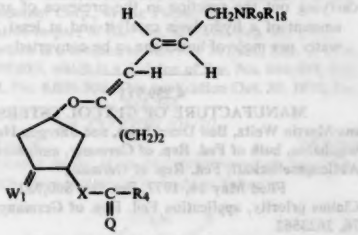
4,239,909

2-DECARBOXY-2-AMINOMETHYL-9-DEOXY-5,9α-EPOXY-2,3,4,5-TETRADEHYDRO-PGF$_1$ COMPOUNDS

Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 936,295, Aug. 23, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,460
Int. Cl.³ C07D 311/74
U.S. Cl. 542—422 8 Claims

1. A 4Z compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH_2OH:β-H;

wherein Q is oxo, α-H:β-H, α-OH:β-R_8 or α-R_8:β-OH

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and

wherein R_4 is

(1) —CR_5R_6—C_gH_{2g}—CH_3 or

(2) —CR_5R_6—Z—(Ph)

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6— and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7—, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;

wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive; and

wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH_2CH_2—;

including the lower alkanoates thereof.

4,239,910

MANUFACTURE OF BUTENEDIOL DIESTERS

Hans-Martin Weitz, Bad Duerkheim; Rolf Platz, Mannheim, and Juergen Hartig, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 18, 1977, Ser. No. 779,284

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1976, 2611423

Int. Cl.[3] C07C *67/055, 69/08, 69/16*

U.S. Cl. 560—244 7 Claims

1. In a one-step liquid phase process for the manufacture of butenediol diesters by reacting liquid butadiene, molecular oxygen and a carboxylic acid in a reaction chamber and in the presence of an effective amount of an acyloxylation catalyst containing platium or palladium, the improvement which comprises:

using an ester of the carboxylic acid with a short-chain aliphatic alcohol in place of the carboxylic acid and

carrying out the reaction in the presence of an effective amount of a hydrolysis catalyst and at least 1 mole of water per mole of butadiene to be converted.

4,239,911

MANUFACTURE OF GLYCOL ESTERS

Hans-Martin Weitz, Bad Duerkheim, and Juergen Hartig, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 24, 1977, Ser. No. 800,922

Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623562

Int. Cl.[3] C07C *67/05, 69/08, 69/16*

U.S. Cl. 560—246 6 Claims

1. In a one-step liquid phase process for the manufacture of ethylene glycol diformate or diacetate or 1,2-propylene glycol diformate or diacetate by reacting ethylene or propylene, molecular oxygen and the appropriate carboxylic acid in a reaction chamber and in the presence of an effective amount of oxyacylation catalyst containing a compound of a transition metal selected from the group of Te, Ce, Sb, Mn, V, Ga, As and Co in conjuction with a halogen or a hydrohalic acid, the improvement which comprises:

using an ester of formic acid or acetic acid with a short-chain aliphatic alcohol of 1–5 carbon atoms in place of the carboxylic acid and

carrying out the reaction in the presence of an effective amount of an hydrolysis catalyst and not less than 1 mole of water per mole of olefin converted.

4,239,912

PROCESS FOR RESOLVING DL-MANDELIC ACID WITH NOVEL 2-BENZYLAMINO-1-BUTANOLS

Imre A. Halmos, Summit, N.J., assignor to American Cyanamid Company, Stamford, Conn.

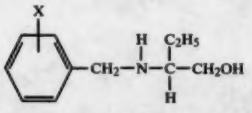
Continuation of Ser. No. 831,024, Sep. 6, 1977, abandoned. This application Dec. 8, 1978, Ser. No. 968,041

Int. Cl.[3] C07B *19/00*

U.S. Cl. 562—401 6 Claims

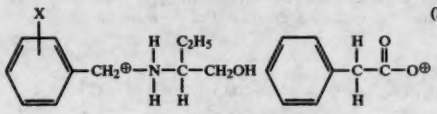
1. A process for resolving DL-mandelic acid which comprises:

(a) reacting about equimolecular amounts of DL-mandelic acid and an optically active 2-benzylamino-1-butanol represented by formula (I),



(I)

wherein X represents chloro, bromo, fluoro, or nitro, at about 40°–50° C. in a two-phase mother liquor, consisting of a mixture of a water phase and a water immiscible organic phase, said organic phase being a lower alkyl ester of a lower aliphatic carboxylic acid selected from ethyl acetate, n-propyl acetate, isopropyl acetate, ethyl propionate, n-propyl propionate, or isopropyl propionate, or mixtures thereof, to form a mandelate salt represented by formula (II),



(II)

(b) cooling the reaction mixture to crystallize said mandelate salt;

(c) separating the crude mandelate salt from the two-phase mother liquor;

(d) recrystallizing or slurrying the crude mandelate salt in a solvent medium selected from water, methanol, ethanol, or isopropanol, or mixtures thereof, to obtain an optically pure mandelate salt;

(e) alkalizing the water phase of the two-phase mother liquor obtained in step (c);

(f) separating the alkalized water phase from the organic phase;

(g) agitating the optically pure mandelate salt from step (d) and the organic phase from step (f) with about 1.05 to 1.10 moles of aqueous sodium or potassium hydroxide per mole of mandelate salt at ambient temperature to hydrolyze said salt and form a clear two-phase liquid mixture consisting of an organic phase containing an optically active compound of formula (I) and an alkalized aqueous phase containing the sodium or potassium salt of an optically active mandelic acid;

(h) recovering the aqueous phase from step (g) and reacting said salt of an optically active mandelic acid with about an equimolecular amount of an organic dicarboxylic acid selected from oxalic, tartaric, maleic, malonic, or fumaric acid, at about 25°–40° C. to form a mixture of an optically active mandelic acid and a mono-sodium or potassium salt of said dicarboxylic acid having a low solubility in water;

(i) cooling the reaction mixture to ambient temperature and diluting the same with a water-soluble organic liquid solvent selected from the group consisting of acetone, methanol, ethanol, n-propanol, and isopropanol to complete the precipitation of said salt of said dicarboxylic acid;

(j) separating said salt of said dicarboxylic acid;

(k) removing said water-soluble organic solvent; and

(l) recovering D-(−) or L-(+)-mandelic acid from said mother liquor.

4,239,913

PROCESS FOR PREPARING 2-HYDROXYNAPHTHALENECARBOXYLIC ACIDS

Ryuzo Ueno, Nishinomiya; Hiroaki Tsuchiya, Kobe; Yasukazu Muramoto, Itami, and Yoshihiko Kuwae, Amagasaki, all of Japan, assignors to Kabushiki Kaisha Veno Seiyaku Oyo Kenkyujo, Osaka, Japan

Filed Aug. 15, 1978, Ser. No. 933,902

Claims priority, application Japan, Oct. 25, 1977, 52-127274; Oct. 26, 1977, 52-127642

Int. Cl.[3] C07C *51/15*

U.S. Cl. 562—425 13 Claims

1. In a process for preparing 2-hydroxynaphthalene-carboxylic acid by the reaction of an alkali β-naphtholate with carbon dioxide, the improvement which comprises reacting a liquid mixture of the alkali β-naphtholate, 0.05 to 3 moles of β-naphthol per mole of the alkali β-naphtholate and 0.1 to 5

times the weight of the alkali β-naphtholate of light oil or kerosene with carbon dioxide under a carbon dioxide pressure of not more than 15 kg/cm².G at a temperature of at least 180° C.

4,239,914

PROCESS FOR PREPARING 2-(6'-METHOXY-2'-NAPHTHYL)-PROPIONIC ACID

Stefano Campolmi; Maria G. Felicioli, both of Novara; Vittorio Carletti, Meda, and Roberto Santi, Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

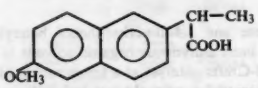
Filed May 21, 1979, Ser. No. 40,955

Claims priority, application Italy, May 22, 1978, 23652 A/78

Int. Cl.³ C07C *65/00, 65/11*

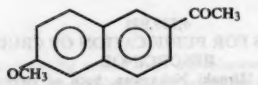
U.S. Cl. 562—466 **29 Claims**

1. Process for preparing (2-(6'-methoxy-2'-naphthyl)-propionic acid of the formula:



(I)

characterized in that 2-acetyl-6-methoxynaphthalene having the formula:



(II)

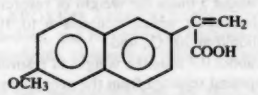
is reacted in organic solvents with a system consisting of:

(a) a haloform selected from $CHCl_3$ and $CHBr_3$,

(b) an aqueous solution of an inorganic base selected from NaOH and KOH, and

(c) a compound selected from the crown-ethers and the hydrocarbyl salts of quaternary ammonium and phosphonium,

at a temperature comprised between approximately 0° and 50° C., and in that from the resulting 2-(6'-methoxy-2'-naphthyl)-acrylic acid of formula:



(III)

acid (I) is obtained by hydrogenation in the presence of a catalyst selected from rhodium and palladium catalysts.

4,239,915

PERFLUOROALKYL CARBOXYLIC ACIDS

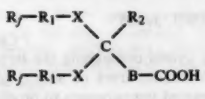
Robert A. Falk, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 2, 1976, Ser. No. 747,114

Int. Cl.³ C07C *51/347*

U.S. Cl. 562—481 **11 Claims**

1. A perfluoroalkyl acid for the formula



wherein

R_f is perfluoroalkyl of 1 to 18 carbon atoms, or said perfluoroalkyl substituted by perfluoroalkoxy of 2 to 6 carbon atoms;

R_1 is branched or straight chain alkylene of 1 to 12 carbon atoms, alkylenethioalkylene of 2 to 12 carbon atoms, alkyleneoxyalkylene of 2 to 12 carbon atoms, or alkyleneiminoalkylene of 2 to 12 carbon atoms where the nitrogen atom contains as a third substituent, hydrogen or alkyl of 1 to 6 carbon atoms;

X is —S—, —SO— or —SO_2—;

R_2 is hydrogen, straight or branched alkyl of 1 to 6 carbon atoms, phenyl, alkyl substituted phenyl of up to 18 carbon atoms or —B—COOH; and

B is a covalent bond or alkylene of up to 18 carbon atoms.

4,239,916

ISOCYANURATE FOAM CATALYST

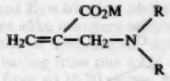
Robert L. Zimmerman; Edward E. McEntire, both of Austin, and Howard P. Klein, Houston, all of Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 837,348, Sep. 28, 1977, abandoned, which is a division of Ser. No. 747,452, Dec. 3, 1976, Pat. No. 4,099,014, which is a division of Ser. No. 644,494, Dec. 29, 1975, Pat. No. 4,026,836. This application Oct. 30, 1978, Ser. No. 956,293

Int. Cl.³ C07C *101/30*

U.S. Cl. 562—574 **2 Claims**

1. A compound useful as an isocyanurate group formation catalyst which has a structural formula as follows:



where the radicals represented by R are hydroxy lower alkyl and M is selected from the group consisting of sodium, potassium, cesium, lithium, and rubidium.

4,239,917

BARIUM OXIDE CATALYZED ETHOXYLATION

Kang Yang, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 916,421, Jun. 16, 1978, abandoned. This application Jul. 2, 1979, Ser. No. 54,322

Int. Cl.³ C07C *41/03*

U.S. Cl. 568—618 **9 Claims**

1. A method for the ethoxylation of alkanols comprising contacting said alkanols with ethylene oxide in the presence of a catalyst selected from the group consisting of barium oxide, barium hydroxide, hydrated barium hydroxide or barium metal at a temperature of from about 200° F. to about 500° F.

4,239,918

META, PARA-SUBSTITUTED ISOPROPYLIDENE BISPHENOLS AND METHODS FOR MAKING

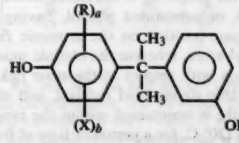
Donald E. Keeley, Menlo Park, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 6, 1978, Ser. No. 966,895

Int. Cl.³ C07C *43/205, 39/16, 41/00*

U.S. Cl. 568—640 **7 Claims**

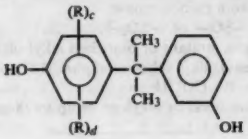
1. Bisphenols of the formula,



where R is a monovalent radical selected from $C_{(1-8)}$ alkyl

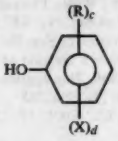
radicals, and $C_{(1-4)}$ alkoxy radicals, X is a halogen radical selected from chloro and bromo, a is a whole number having a value of from 0 to 3 inclusive, b is a whole number having a value of 0 to 2 inclusive and the sum of a+b has a value of 0 to 4 inclusive.

6. A method for making a bisphenol of the formula,

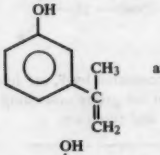


which comprises

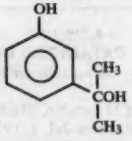
(A) effecting reaction between a phenol of the formula,



and a meta-substituted phenol selected from the class consisting of



and



in the presence of an acid catalyst and at a temperature of from 0° C. to 100° C., and

(B) recovering the bisphenol from the mixture of (1),

where R is a monovalent radical selected from $C_{(1-8)}$ alkyl radicals $C_{(1-4)}$ alkoxy radicals, X is a halogen radical selected from chloro and bromo, c is a whole number equal to 0 to 3 inclusive, d is a whole number equal to 0 to 2 inclusive and the sum of c and d is equal to 0 to 4 inclusive.

4,239,919

PROCESS FOR OBTAINING BISPHENOLS

Thomas J. Hairston, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 12, 1979, Ser. No. 47,854

Int. Cl.³ C07C *39/12*

U.S. Cl. 568—727 **19 Claims**

1. The process for preparing a bisphenol which comprises reacting a phenol, or substituted phenol, having a reactive hydrogen in the para-position on the aromatic ring, with a reactive bis alkenyl ether, wherein the olefinic unsaturation is in the alpha position with respect to the ether linkage, in the presence of a suitable strong acid catalyst, and wherein the reaction temperature is maintained within the range of from about 45° to about 120° C. for a period of time of from about 6 to about 300 minutes.

4,239,920

PROCESS FOR PREPARING 6-ISOBORNYL-3,4-XYLENOL

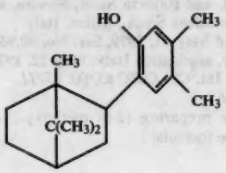
Maria L. Del Conte, Trieste, Italy, assignor to Farmatis, S.p.A., Milan, Italy

Filed Mar. 27, 1979, Ser. No. 24,208

Int. Cl.³ C07C *39/15, 39/17*

U.S. Cl. 568—734 **4 Claims**

1. A process for preparing 6-isobornyl-3,4-xylenol of formula



wherein camphene and 3,4-dimethylphenol benzylether are condensed in an inert anhydrous organic solvent in the presence of a Friedel-Crafts catalyst at a temperature of about 0° C., and the 6-isobornyl-3,4-xylenol benzylether thus obtained is debenzylated by hydrogenation in the presence of a hydrogenation catalyst chosen from the group consisting of Pb, Pt and their compounds.

4,239,921

PROCESS FOR PURIFICATION OF CRUDE RESORCINOL

Isao Hashimoto; Hiroaki Nakagawa, both of Iwakuni; Toru Taguchi, Ichihara, and Hirohiko Nambu, Iwakuni, all of Japan, assignors to Mitsu, Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 10, 1979, Ser. No. 56,231

Claims priority, application Japan, Jul. 10, 1978, 53/82902

Int. Cl.³ C07C *37/70*

U.S. Cl. 568—753 **9 Claims**

1. In a process for purification of crude resorcinol derived from an acid-cleavage product of m-diisopropylbenzene dihydroperoxide and containing impurities having higher boiling points than resorcinol, the improvement wherein of said crude resorcinol is recrystallized from a mixed solvent consisting of

(a) about 0.5 to about 5 times the weight of resorcinol of an aromatic hydrocarbon which contains 6 to 10 carbon atoms and is liquid at 20° C., and

(b) about 0.1 to about 0.7 time the weight of resorcinol of at least one compound selected from the group consisting of alkyl phenols having a C_1–C_4 alkyl group and acyl phenols derived from C_2–C_4 aliphatic monocarboxylic acids.

4,239,922

XYLOSE AND XYLITOL SEPARATELY PURIFIED IN SAME ION EXCHANGER

Theodor Riehm, Heidelberg; Theodor Auel, Ilvesheim, and Wilhelm Spatz, Ober-Kainsbach, all of Fed. Rep. of Germany, assignors to Benckiser-Knapsack GmbH, Ladenburg, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 48,074

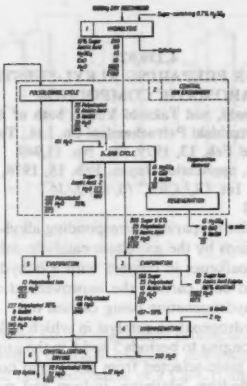
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827477

Int. Cl.³ C07C *31/18*

U.S. Cl. 568—863 **7 Claims**

1. A process for producing xylitol comprising the steps of: decomposing the wood of deciduous trees or annual plants with dilute mineral acid at elevated temperatures to produce a solution containing principally xylose sugar with minor proportions of acetic acid and mineral salts; subjecting the sugar

solution to ion exchange treatment and decolorization in an exchanger; hydrogenating the sugar solution to produce a polyalcohol solution containing principally xylitol; subjecting the polyalcohol solution to an ion exchange treatment; and



thereafter recovering xylitol from the solution; said exchange treatment of the sugar solution and exchange treatment of the polyalcohol solution being effected in separate sugar and polyalcohol cycles in the same exchanger.

4,239,923

LINALOOL FROM DIMETHYLOCTADIENE VIA EPOXIDE AND CYCLOOCTENOL

Aaldert J. deJong, and Hendricus J. Heijmen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 844,956, Oct. 25, 1977. This application Nov. 2, 1979, Ser. No. 90,769

Claims priority, application United Kingdom, Nov. 1, 1976, 45309/76

Int. Cl.³ C07C *33/02*

U.S. Cl. 568—875 **2 Claims**

1. A process for preparation of alpha-linalool which comprises:

(a) epoxidizing 1,5-dimethylcycloocta-1,5-diene by reaction with an alkyl hydroperoxide in the presence of a catalyst selected from the class consisting of titanium and molybdenum to afford 5,6-epoxy-1,5-dimethyl-1-cyclooctene;

(b) reducing the 5,6-epoxy-1,5-dimethyl-1-cyclooctene product of step (a) by reaction with an alkali metal selected from the class consisting of sodium, potassium and lithium in the presence of an amino compound selected from the class consisting of liquid ammonia, ethylene diamine, diethylamine, pyridine and hexamethylphosphoric acid triamide to form 1,5-dimethylcyclooct-1-en-5-ol; and

(c) thermally isomerizing the 1,5-dimethylcyclooct-1-en-5-ol product of step (b) at a temperature in the range of 350° to 650° C. to afford alpha-linalool.

4,239,924

ETHANOL FROM METHANOL

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

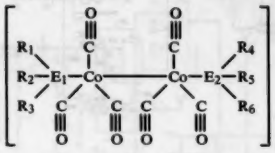
Continuation-in-part of Ser. No. 930,339, Aug. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 876,109, Feb. 8, 1978, abandoned. This application May 25, 1979, Ser. No. 42,426

The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.³ C07C *27/00*

U.S. Cl. 568—902 **25 Claims**

1. A process for selectively producing ethanol which comprises introducing into a reaction zone (1) methanol, (2) hydrogen, (3) carbon monoxide, (4) a cobalt tricarbonyl complex defined by the following formula:



wherein each of E_1 and E_2 is trivalent phosphorus; and R_1, R_2, R_3, R_4, R_5 and R_6 are alike members selected from the group consisting of saturated or unsaturated, straight or branched chain alkyl radicals having from one to 24 carbon atoms; and aryl radicals having from six to 20 carbon atoms; (5) an iodine compound and (6) a ruthenium compound and then subjecting the contents of said reaction zone to an elevated temperature and an elevated pressure for a time sufficient to convert methanol to ethanol.

4,239,925

ETHANOL FROM METHANOL

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 863,743, Dec. 23, 1977, abandoned. This application May 25, 1979, Ser. No. 42,516

Int. Cl.³ C07C *27/00*

U.S. Cl. 568—902 **17 Claims**

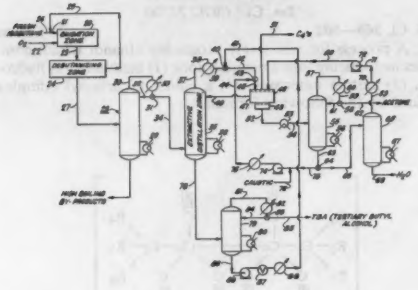
1. A process for the homologation of methanol to ethanol which comprises introducing into a reaction zone methanol, hydrogen, carbon monoxide, a cobalt tricarbonyl complex of the formula:

wherein R_1, R_2, R_3, R_4, R_5 and R_6 are aryl radicals having from six to 20 carbon atoms, and an iodine promoter and then subjecting the contents of said reaction zone to an elevated temperature and an elevated pressure for a time period sufficient to convert methanol to ethanol.

4,239,926
REMOVING WATER FROM TERTIARY BUTYL ALCOHOL

Henry R. Grane, Springfield; John C. Jubin, Jr., Wallingford, and G. Richard Worrell, Media, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 25, 1979, Ser. No. 51,561
Int. Cl.[3] B01D *3/40*; C07C *29/30*
U.S. Cl. 568—910 6 Claims



1. In the method in which oxygen reacts with isobutane in an isobutane oxidation zone to provide tertiary butyl alcohol as a principal product and in which water is among the byproducts, and in which the tertiary butyl alcohol is employed for blending into gasoline, thus necessitating a smaller amount of water in the tertiary butyl alcohol than formed as a byproduct from the oxidation of isobutane, the improvement in drying the tertiary butyl alcohol which consists of:

directing a stream of wet tertiary butyl alcohol into an extractive distillation zone, and directing a stream of xylene downwardly through said extractive distillation zone while vaporizing a major portion of the water from the tertiary butyl alcohol, and withdrawing overhead vapors of water and other volatilized components;

transferring from the bottom of said extractive distillation zone a liquid stream comprising xylene and tertiary butyl alcohol to the middle of a distillation zone designated as a xylene stripping zone, and removing from the bottom of said xylene stripping zone a stream of recyclable xylene, and withdrawing overhead from said xylene stripping zone a stream of vapor of substantially dry tertiary butyl alcohol.

4,239,927
REMOVAL OF ORGANIC CHLORIDES FROM SYNTHETIC OILS

James A. Brennan, Cherry Hill, and Henry D. Norris, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,226
Int. Cl.[3] C07C *15/107*
U.S. Cl. 585—24 14 Claims

1. A process for making an oil of lubricating viscosity by the steps comprising:

(1) reacting a C_8–C_{10} olefin in the presence of an aluminum halide catalyst to give a polymer containing from 20 to 150 carbon atoms, preferably 30 to 100 carbon atoms, and, without removing the aluminum halide,

(2) contacting the total reaction mixture from

(1) with a monocyclic aromatic compound.

8. A product obtained by the steps comprising:

(1) reacting a C_8–C_{10} olefin in the presence of an aluminum halide catalyst to give a polymer containing from 20 to 150 carbon atoms, preferably 30 to 100 carbon atoms, and, without removing the aluminum halide,

(2) contacting the total reaction mixture from

(1) with a monocyclic aromatic compound.

4,239,928
PROCESS FOR PREPARING ALKYL-SUBSTITUTED AROMATIC COMPOUNDS

Kunimasa Takahashi, and Takashi Yokoi, both of Ami, Japan, assignors to Mitsubishi Petrochemical Co. Ltd., Tokyo, Japan

Filed Feb. 13, 1979, Ser. No. 11,949
Claims priority, application Japan, Feb. 15, 1978, 53-15330
Int. Cl.[2] C07C *15/02, 5/36*
U.S. Cl. 585—431 10 Claims

1. In a process for preparing corresponding alkyl-substituted aromatic compounds by the gas phase catalytic dehydrogenation of vinylcycloalkenes in contact with a dehydrogenation catalyst supported on a carrier, the improvement comprising said catalytic dehydrogenation being carried out

(i) using a dehydrogenation catalyst in which at least one of elements belonging to periods 5 and 6 in the group VIII of the periodic table selected from the group consisting of palladium, rhodium, platinum, iridium and ruthenium is supported on active carbon

(ii) by introducing steam into the reaction system,

(iii) but without introducing hydrogen into the reaction system,

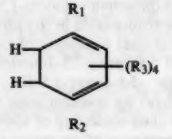
(iv) at conditions of temperatures ranging from 300° C. to less than 350° C. and pressures less than 2.5 atm (absolute pressure), wherein a liquid hourly space velocity (LHSV) is set at about 5 hr^{-1} or less when the catalytic dehydrogenation is effected in the presence of said catalyst in which palladium alone is supported on active carbon.

4,239,929
AROMATIZATION OF DIENES IN THE LIQUID PHASE

Divakaran Masilamani, Morristown, and Milorad M. Rogic, Whippany, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 1, 1978, Ser. No. 956,756
Int. Cl.[3] C07C *5/20, 15/10*
U.S. Cl. 585—442 11 Claims

1. A method of producing aromatic compounds which comprises reacting in the liquid phase sulfur dioxide with a diene selected from the group consisting of alkyl cyclo-hexa-1,3-dienes of the formula:

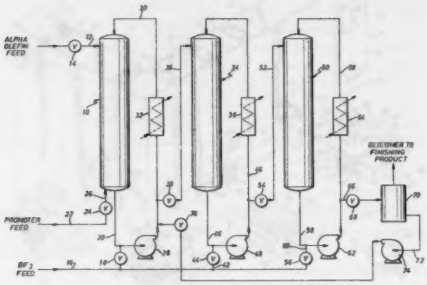


where R_1 is alkyl of 1–6 carbons, R_2 is hydrogen or alkyl of 1–6 carbons and R_3 is independently at each occurrence hydrogen or alkyl of 1–6 carbons, and cyclohexa-1,4-dienes, under conditions producing the corresponding aromatic compound, including, when the diene is an alkyl cyclohexa-1,3-diene, the presence of oxygen.

4,239,930
CONTINUOUS OLIGOMERIZATION PROCESS

N. Lee Allphin, Pinehurst; Fred S. Valentine, Houston, and Gary W. Grams, Spring, all of Tex., assignors to Pearsall Chemical Company, Houston, Tex.

Filed May 17, 1979, Ser. No. 39,832
Int. Cl.[3] C07C 2/02
U.S. Cl. 585—517 15 Claims



1. In a process for the continuous production of an oligomer product having a desirable oligomer distribution, said process involving the oligomerization of a C_8–C_{12} alpha-olefin monomer in the presence of a promoted boron trifluoride catalyst, the improvement wherein the oligomerization is carried out in a system comprising a plurality of loop recycle reactors in series, such that:

(a) the total residence time of alpha-olefin monomer/oligomer product in said system is from about one to two hours; and

(b) the flow rate through each of said plurality of loop recycle reactors affects a turnover of contents in each reactor at least once every five minutes.

4,239,931
HF ALKYLATIOR PROCESS

Michael Z. Mikulicz, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

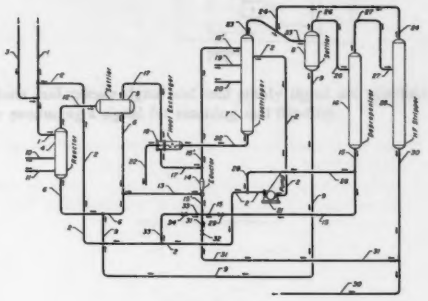
Filed Nov. 5, 1979, Ser. No. 91,659
Int. Cl.[3] C07C 2/58
U.S. Cl. 585—723 11 Claims

1. A process for the hydrofluoric acid-catalyzed alkylation of an olefin with an isoparaffin utilizing an isoparaffin stripping column-integrated acid catalyst regeneration system which comprises the steps of:

(a) reacting said olefin with said isoparaffin in an alkylation reaction zone in admixture with a hydrofluoric acid catalyst at alkylation reaction conditions resulting in a reaction product effluent comprising a normally liquid alkylate product, unreacted isoparaffin, hydrofluoric acid catalyst, and polymer products;

(b) introducing said reaction zone effluent into a separation zone, and settling said mixture into an acid-immiscible hydrocarbon phase and a polymer-containing acid phase;

(c) recovering and recycling a first portion of said acid phase to said reaction zone;



(d) recovering and heating said hydrocarbon phase to increase the solubility potential of hydrofluoric acid therein;

(e) recovering and transferring a second portion of said acid phase to the suction inlet of an eductor and entraining said acid phase in a C_3–C_4 paraffinic hydrocarbon pumping fluid charged therethrough;

(f) admixing the acid-containing eductor effluent with said heated hydrocarbon phase; and,

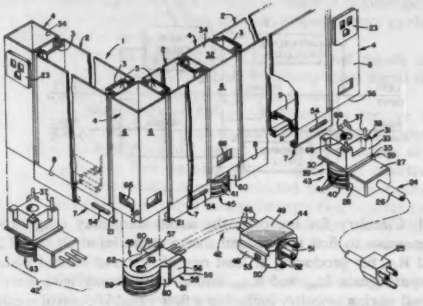
(g) introducing the resulting mixture into a stripping column and stripping a polymer-free acid catalyst therefrom by means of a counterflowing isoparaffin-containing stream, separating an intermediate isoparaffin fraction from said column, and recovering a polymer-containing, normally liquid, alkylate bottoms product.

4,239,932

PARTITION WIRING SYSTEM

Melvin A. Textoris, Struthers, and Richard Rauschenberg, North Jackson, both of Ohio, assignors to GF Business Equipment, Inc., Youngstown, Ohio

Filed Jan. 18, 1979, Ser. No. 4,452
Int. Cl.³ H02G 3/00
U.S. Cl. 174—48 16 Claims



1. A partition assembly including a wiring system, said assembly including, a panel having a bottom and two lateral edges, a post attached to each said lateral edge, an electrical raceway having an interior mounted beneath said panel bottom, a harness assembly disposed within said electrical raceway, said harness assembly including a male connector and a female connector joined by a plurality of harness wires, means slidably mounting at least a portion of said two connectors within said electrical raceway interior at the respective ends thereof, said female connector including a head disposed beneath one of said posts having peripheral female electrical contact means therein, the other of said posts having an additional female connector therebeneath, said additional female connector provided with a head having peripheral female electrical contact means therein, said male connector having a plurality of male electrical contact means projecting from one end thereof removably insertable within the adjacent said female electrical contact means of said additional female connector, at least one electrical outlet mounted on said partition assembly, outlet wires electrically joining each said outlet with said harness assembly, and an electrical supply line joined to said additional female connector and its electrical contact means whereby current delivered by said supply line to said additional female connector is transmitted by said harness assembly to provide current to all said connectors and outlets.

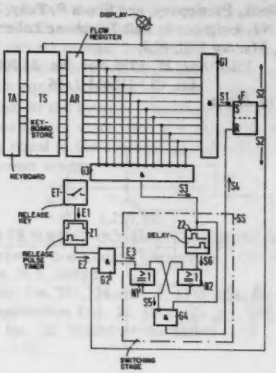
4,239,933

CIRCUIT ARRANGEMENT FOR RELEASING A KEYBOARD STORE IN TELEPRINTERS OR DATA PRINTERS

Gerd J. Güenther, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 4, 1979, Ser. No. 36,057
Claims priority, application Fed. Rep. of Germany, May 11, 1978, 2820673
Int. Cl.³ H04L 13/08
U.S. Cl. 178—17.5 8 Claims

1. A circuit arrangement for releasing a keyboard store in teleprinters or data printers, comprising a keyboard store, a flip-flop, means operatively connecting said flip-flop to the keyboard store for setting said flip-flop when said store becomes full, with said flip-flop thereby producing a blocking signal for preventing the input of further characters into the keyboard store, a release key actuatable to produce a release signal which enables further input of characters into the keyboard store, means for producing an empty signal when the keyboard store has become empty, and a switching stage to



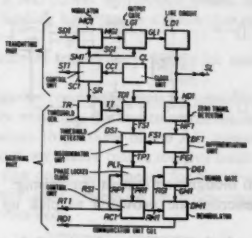
which said release signal and said empty signal are supplied, for producing a signal for resetting said flip-flop.

4,239,934

MEANS AND AN APPARATUS FOR SYNCHRONIZING AN ORTHOGONAL DIPHASE CODE RECEIVER

Birger L. Andren, Handen, and Lars T. E. Svensson, Skärholmen, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Nov. 24, 1978, Ser. No. 963,206
Claims priority, application Sweden, Dec. 2, 1978, 7713697
Int. Cl.³ H04L 7/08
U.S. Cl. 375—113 6 Claims

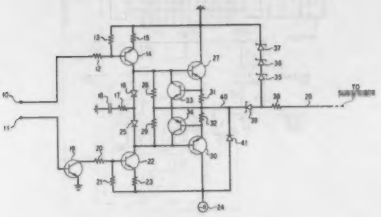


1. In a communication system which transfers bursts of digital signals by means of orthogonal diphase code, the method of synchronizing a receiver to the phase position of the signals being transmitted on a line from a transmitter comprising the steps of: (1) in each burst of signals providing a starting pulse having a polarity which is opposite to the polarity of the following signal element, (2) detecting in the receiver said starting pulse by comparison of the levels of the incoming signals arriving at the receiver with a threshold value, and (3) generating a synchronizing signal for the receiver in response to the first zero transition of received signals following said starting pulse.

4,239,935
RINGING GENERATOR

Barry S. Bosik, Parsippany, and Frank P. Tuhy, Jr., Montville, both of NJ, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1979, Ser. No. 34,200
Int. Cl.[3] H04M *1/66*
U.S. Cl. 179—84 R 10 Claims

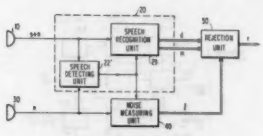


1. A ringing signal generator for operating telephone ringers CHARACTERIZED BY
a capacitor,
means for alternately and linearly charging and discharging said capacitor, and
means responsive to said capacitor charging means for supplying trapezoidal ringer signals to said telephone line.

4,239,936
SPEECH RECOGNITION SYSTEM

Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 974,274
Claims priority, application Japan, Dec. 28, 1977, 52-157966; Dec. 28, 1977, 52-157967; Dec. 28, 1977, 52-157969
Int. Cl.[3] G10L *1/00*; H03G *3/32*
U.S. Cl. 179—1 SD 7 Claims

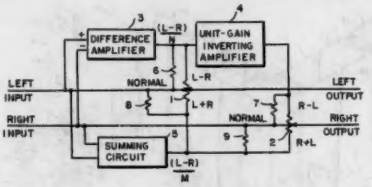


6. A speech recognition system comprising:
a speech microphone provided to pick up input speech signals;
means for calculating the amplitude of the speech signals picked up by said speech microphone;
a noise microphone provided to pick up ambient noises;
means for calculating the intensity of the noises picked up by said noise microphone;
a speech-signal detecting unit for determining speech signal durations by monitoring the amplitude of said speech signals compensated for by the intensity of said noises;
a recognition unit for recognizing said input speech signals given in speech signal durations; and
a rejection unit which, when the intensity of said noise exceeding a predetermined standard value is detected in any of said speech signal durations, rejects the recognition results determined by said recognition unit.

4,239,937
STEREO SEPARATION CONTROL

Frank S. Kampmann, 8 Belknap St., Arlington, Mass. 02174

Filed Jan. 2, 1979, Ser. No. 528
Int. Cl.[3] H04S *1/00*
U.S. Cl. 179—1 G 16 Claims

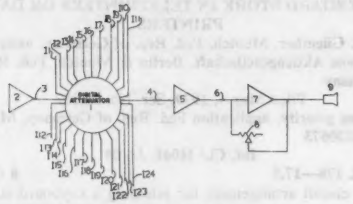


1. Circuitry for use over the audio frequency range and responsive to first and second stereo audio input signals, L_{in} and R_{in}, for producing at least one of first and second audio output signals, L_{out} and R_{out}, said circuitry comprising stereo signal mixing circuitry including a first variable control means having a parameter, K, capable of varying over a range $-1 \leqq K \leqq +1$ second variable control means having a parameter, K', capable of varying over a range $-1 \leqq K' \leqq +1$; said first variable control means being responsive to said first and second input signals for selectively controlling the proportions of said first input signal and said second input signal to produce said first output signal such that the relationship between said first and second input signals and said first output signal is proportional to $(L_{in})(1-K)+(K)(L_{in}+R_{in})/(M)$ for $0 \leqq K \leqq +1$, and to $(L_{in})(1+K)-(K)(L_{in}-R_{in})/(N)$ for $-1 \leqq K \leqq 0$; said second variable control means being responsive to said first and second input signals for selectively controlling the proportions of said second input signal and said first input signal such that the relationship between said first and second input signals and said second output signal is proportional to $(R_{in})(1-K')+(K')(L_{in}+R_{in})/(M)$ for $0 \leqq K' \leqq +1$, and to $(R_{in})(1+K)-(K')(R_{in}-L_{in})/(N)$ for $-1 \leqq K' \leqq 0$, where 1/M is an instantaneous sum factor the value of which is adjustable and 1/N is an instantaneous difference factor the value of which is adjustable.

4,239,938
MULTIPLE INPUT SIGNAL DIGITAL ATTENUATOR FOR COMBINED OUTPUT

Robert A. Ponto, Louisville, Ky., assignor to Innovative Electronics Design, Louisville, Ky.

Filed Jan. 17, 1979, Ser. No. 4,197
Int. Cl.[3] H04M *1/60*
U.S. Cl. 179—1 VL 7 Claims



1. Digital attenuator means to stepwise modify a program signal to be controlled including:
(a) signal pulse generator means to provide repeated pulse-like counting signals;
(b) first counter means having:
(i) counter input means to receive said counting signals;

(ii) multiple first counter output means each providing a first counter output signal when activated;

(iii) first counter control means to count said counting signals and selectively activate and deactivate each of said first counter output means in selected patterns in response to selected numbers of counting signals so said first counter provides a selected pattern of first counter output signals from a portion of said first counter output means to define a first counter output control cycle;

(c) multiplex means having:

(i) a selected number of multiplex signal inputs each adapted to receive a single bit binary input signal from selected signal generator source means;

(ii) multiplex output means to selectively receive said binary input signals from said multiplex signal inputs;

(iii) Multiplex control means having input means to receive said first counter output signals and selectively and individually connect selected multiplex inputs to said multiplex output means during a first counter cycle to transfer said binary input signals to said multiplex output in response to receipt of said first counter output signals;

(d) second counter means to count the number of binary signals received from said multiplex output means during a selected time period and transfer the counted signals as a binary attenuator control number to second counter output means;

(e) attenuator means having:

(i) multiple parallel attenuator inputs each adapted to be selectively activated and each adapted to receive said program signal to be controlled and a portion thereof having mutually different electrical impedance valves;

(ii) attenuator output means adapted to receive an attenuated program signal from the portion of said attenuator inputs which are activated; and

(iii) attenuator control means including attenuator switch means connected to said second counter output means to receive said second counter binary attenuator control member and adapted to activate selected attenuator inputs to provide an attenuated output program signal.

4,239,939

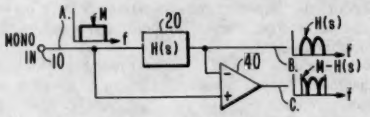
STEREOPHONIC SOUND SYNTHESIZER

Patrick D. Griffis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 18,905

Int. Cl.³ H04S 5/00

U.S. Cl. 179—1 GP **24 Claims**



20. In a television receiver including a kinescope, a stereo synthesizer for producing synthesized stereo sound signals from a source of monophonic input signals comprising:

first and second loudspeakers located on either side of said kinescope;

a first signal responsive to said monophonic input signals and having an output coupled to said first loudspeaker for producing a first synthesized stereo sound signal, said first channel exhibiting an amplitude versus frequency response characteristic with a first notch of minimum amplitude at a frequency below the average first formant frequency of the human voice, and a second notch of minimum amplitude at a frequency above the average third formant frequency of the human voice; and

a second signal channel responsive to said monophonic input signals and having an output coupled to said second loudspeaker for producing a second synthesized stereo sound signal, said second channel exhibiting an amplitude versus frequency response characteristic with a notch of minimum amplitude at a frequency intermediate the average first and second formant frequencies of the human voice,

wherein said first and second response characteristics exhibit respective equal amplitudes at a first frequency substantially equal to the average frequency of maximum intensity of the human voice, and at a second frequency substantially equal to the average second formant frequency of the human voice.

4,239,940

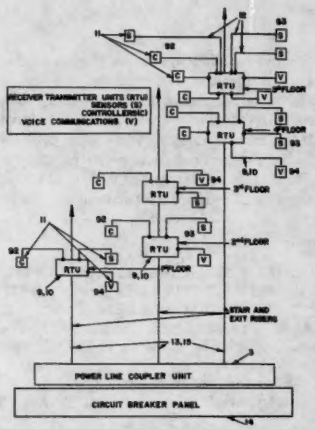
CARRIER CURRENT COMMUNICATIONS SYSTEM

Bertrand Dorfman, c/o Codata Corporation, 520 Nuber Ave., Mt. Vernon, N.Y. 10550

Division of Ser. No. 757,736, Jan. 7, 1977, Pat. No. 4,139,735. This application Dec. 26, 1978, Ser. No. 973,157

Int. Cl.³ H04M 11/00; H04H 1/08

U.S. Cl. 179—2.51 **18 Claims**



11. A carrier current communications system for a large building having AC power distribution means including stairwell exit and landing light power distribution risers comprising:

(a) carrier current transmission means for transmitting signals,

(b) carrier current receiving means for receiving signals, and

(c) means for coupling the transmission means and the receiving means to portions of the AC power distribution means which are secure from excessive loading and physical disruption comprising means for coupling to the stairwell exit and landing risers for carrier current communications therebetween.

4,239,941

RINGING SIGNAL GENERATOR

John A. Gauthier; David M. Shaver, and John R. Ramsay, all of Brockville, Canada, assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 1, 1979, Ser. No. 16,672

Int. Cl.³ H04M 1/26

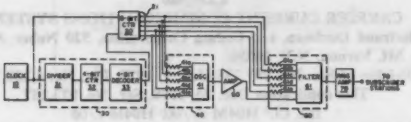
U.S. Cl. 179—84 R **10 Claims**

1. A ringing signal generator for use in a telephone communication system connectable to a plurality of telephone substations including at least a first substation responsive to a first ringing signal frequency and a second substation responsive to a second ringing signal frequency, said ringing signal generator comprising:

clock means operated to generate a plurality of periodic clock pulses;

timing means connected to said clock means, periodically operated in response to a first predetermined number of said clock pulses to generate a first timing signal;

counting means connected to said clock means and to said timing means operated in response to said first timing signal to count said clock pulses and generate a plurality



of sequential enabling signals, each associated with a different count of said counting means; and

variable frequency signaling means connected to said counting means, operated in response to said sequential enabling signals to generate a ringing signal comprising a plurality of different frequencies, each associated with a different one of said enabling signals, for sequential transmission to said plurality of telephone substations.

4,239,942

DUAL RADIAL POSITION SERVO TO COMPENSATE FOR RADIAL TRACKING FAILURE IN AN OPTICAL DISC PLAYER

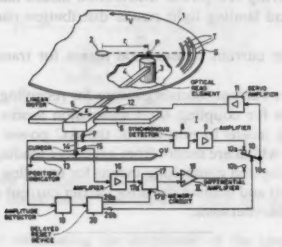
Antonius A. M. Van Alem, and Cornelis H. J. Vos, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,273

Claims priority, application Netherlands, Aug. 22, 1978, 7808638

Int. Cl.³ G11B *21/10*

U.S. Cl. 179—100.1 G **6 Claims**



1. An improved apparatus for reading a disk-shaped record carrier, on which information is recorded in accordance with a pattern of substantially concentric tracks, which apparatus comprises a read element which cooperates with the record carrier, a positioning member carrying said read element for moving said read element in a radial direction, and a first servo control loop operating in response to indicia on the record carrier for controlling the position of the position member, which first servo control loop is provided with a measuring system for measuring the radial positional deviation of the scanning point on the record carrier relative to a desired track, which point is determined by the read element and a drive means for the positioning member, said drive means being coupled to said measuring system, the improvement being characterized in that the apparatus is provided with

a control circuit means for detecting a failure of said first servo control loop and for generating a first control signal in response to a detected failure in the radial control servo loop,

and switching means coupled to said control circuit means, for rendering the first servo control loop inoperative and for at least substantially simultaneously rendering a second servo control loop operative upon the occurrence of the first control signal, said second servo control loop being provided with a position indicator for supplying a position signal which is representative of the radial position of the read element and is independent of said record carrier indicia, a memory circuit means, which is coupled to said position indicator and to the control circuit, for storing and preserving the value of the position signal at the instant of the occurrence of the first control signal, a differential amplifier for determining the difference between said stored value and the instantaneous value of the position signal, and application means for the application of the difference signal to the drive means of the positioning member.

4,239,943

ADJUSTABLE DUAL SPIDER FOR A LOUDSPEAKER

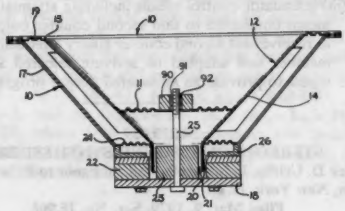
Eugene J. Czerwinski, Studio City, Calif., assignor to Cerwin Vega, Inc., Arleta, Calif.

Continuation of Ser. No. 852,219, Nov. 17, 1977, abandoned.

This application Jan. 18, 1979, Ser. No. 4,591

Int. Cl.³ H04R *9/04*

U.S. Cl. 179—115.5 VC **2 Claims**



2. A stabilizing spider arrangement for use in combination with

a. a conically shaped diaphragm having a front peripheral edge, an external sidewall, an internal sidewall and a base peripheral edge;

b. a cylindrically shaped voice coil member which is mechanically coupled to the diaphragm adjacent to its peripheral edge;

c. a voice coil which is mechanically coupled to the voice coil member;

d. a ring-shaped magnet which is disposed about the voice coil member;

e. a pole piece which is disposed within the voice coil member with the ring-shaped magnet and the pole piece creating a magnetic gap therebetween;

f. a frame that includes a conically shaped portion with an internal sidewall which receives the conically-shaped diaphragm and a base portion which receives the ring-shaped magnet, the voice coil member and the pole piece; and

g. a centering spider which mechanically couples the base portion of the frame to the base peripheral edge of the diaphragm, said stabilizing spider arrangement comprising:

i. a stabilizing spider which is mechanically coupled to the internal sidewall of the diaphragm;

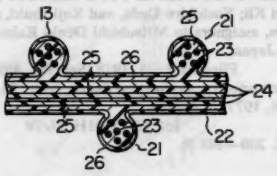
ii. a mass which is mechanically coupled to said stabilizing spider at its center;
iii. a rod which is mechanically coupled to the pole piece and which is disposed perpendicularly thereto at its center; and
iv. a cylindrical Teflon bearing which may be inserted into a hole in said mass so that said mass may slidably engage said rod in order to provide an axial centering of said stabilizing spider arrangement.

4,239,944

SPIDER OF LOUDSPEAKER

Isao Obara; Atsuya Kamada, both of Kamakura, and Aizo Kaneda, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 22, 1979, Ser. No. 5,247
Claims priority, application Japan, Jan. 20, 1978, 53-4388
Int. Cl.³ H04R 9/06
U.S. Cl. 179—115.5 VC **4 Claims**



1. A spider of a loudspeaker comprising:
a spider base material including a plurality of warp yarns and a plurality of weft yarns formed of a bundle of a plurality of inorganic fibers, said plurality of warp yarns being disposed in substantially parallel, spaced relation to one another and said plurality of weft yarns also being disposed in substantially parallel, spaced relation to one another, and said plurality of warp yarns and said plurality of weft yarns being arranged to cross one another in a plain-weave;
a thermosetting synthetic resinous material coating applied to said plurality of warp yarns and said plurality of weft yarns of said spider base material in a manner to provide a gap between the adjacent warp yarns and between the adjacent weft yarns and so as to connect the warp yarns and the weft yarns together at the crossings;
a thermoplastic synthetic resinous material coating applied to the surface of said thermosetting synthetic resinous material coating; and
a plurality of corrugations in the form of concentric circles formed in said spider base material, having said thermosetting synthetic resinous material coating and said thermoplastic synthetic resinous material coating, by heating and pressing.

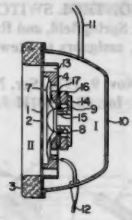
4,239,945

SEALED HEADPHONE

Nobuhisa Atoji, Toyonaka; Shoichi Kusomoto, Matsubara, and Kazue Sato, Kodoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 12, 1977, Ser. No. 859,815
Claims priority, application Japan, Dec. 15, 1976, 51 151103
Int. Cl.³ H04R 1/10
U.S. Cl. 179—182 R **6 Claims**

1. A sealed headphone comprising:
a pad attached to a front side of a mounting plate having sound apertures formed therethrough,
an electro-acoustic transducer having a vibrating element for emitting sounds from the front and rear surface of said element attached to a rear side of said mounting plate,
a sound sealed casing covering the rear side of said electro-acoustic transducer to provide an enclosed rear space within said casing which receives sounds emitted from the rear surface of said element,
first coupling apertures provided in said mounting plate for coupling the rear space within said casing with a front listening space in front of said mounting plate,
said sound apertures channeling sound generated from a front surface of said vibrating element of said electro-



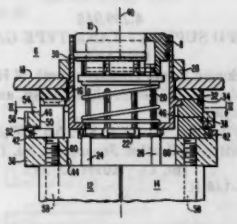
acoustic transducer forwardly into said front listening space, and said first coupling apertures channeling sound generated from a rear surface of said vibrating element within said casing into said front listening space, and
an acoustic-mechanical resonance circuit for improving the high frequency response of said headphone consisting of a volume compliance of said front space, a different volume compliance of said rear space and an acoustic mass reactance of said coupling apertures.

4,239,946

SWITCH OPERATOR WITH SWITCH-MOUNTING ADAPTER

Robert J. Johnston, Patterson Heights; Dominic Colista, Harmony Township, Beaver County; Stephen G. Layciak, Brighton Township, Beaver County, and Stephen S. Dobrosielski, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 4, 1979, Ser. No. 45,450
Int. Cl.³ H01R 33/28
U.S. Cl. 200—51.13 **5 Claims**



1. A switch comprising at least one switch-operating element and a movable selector member, said element comprising a reciprocable plunger, a tubular housing enclosing the member with one end of the member extending from one end of the housing, the other end of the member having means for actuating the plunger, mounting means for mounting the element on the housing and comprising an adapter, the mounting means also comprising a bayonet-type joint including at least two spaced pins having enlarged heads and corresponding spaced pin-receiving slots, the pins and enlarged heads being fixedly mounted in place, one of the pins and slots being on the housing and the other being on the adapter, one of the housing and adapter being rotatable relative to the other to effect locking engagement of the pin heads within the slots, the element being attached to the adapter, the spaced pins extending longitudi-

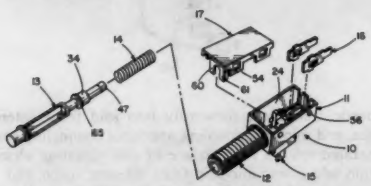
nally of the switch with the enlarged heads extending radially from the corresponding pins, and each slots having a longitudinally-extending pins-receiving portion and having a head-receiving portion extending radially of the pin-receiving portion, whereby the inner-fitting radially-extending portions retain the housing and adapter against longitudinal separation when said element is actuated.

4,239,947

CRUISE CONTROL SWITCH ASSEMBLY

Edward J. Breitung, Springfield, and Ronald J. Hickman, Rochester, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Nov. 9, 1978, Ser. No. 959,410
Int. Cl.³ H01H *3/14*
U.S. Cl. 200—61.89 **16 Claims**



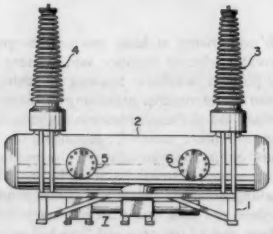
1. A switch having a single actuator for opening and closing two sets of contacts, comprising; a housing, a first set of contacts in the housing, a second independent set of contacts in the housing, a plunger reciprocable in the housing and having an end extending from the housing adapted to be engaged by an external element to actuate both sets of contacts, and a spring biasing the plunger outwardly from the housing, said plunger having a conductive portion fixed thereto in such manner as to prohibit relative movement with respect to said plunger and so dimensioned that it is selectively slideably engageable between and against the first set of contacts in the housing to close the contacts, said plunger having a non-conductive cam portion engageable with the second contacts for actuating the second set of contacts whereby movement of the plunger from the external element causes actuation of the first and second sets of contacts.

4,239,948

GROUNDED SUPPORT TANK TYPE GAS CIRCUIT BREAKER

Masanori Tsukushi; Kunio Hirasawa, both of Hitachi, and Katsuichi Kashimura, Takahagi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 21, 1976, Ser. No. 707,350
Claims priority, application Japan, Jul. 30, 1975, 50-92058
Int. Cl.³ H01H *33/54*
U.S. Cl. 200—148 R **12 Claims**



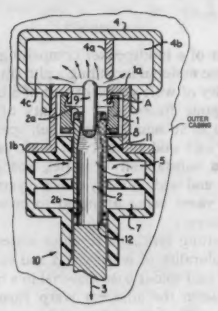
1. A grounded support tank type gas circuit breaker comprising a cylindrical tank maintained at ground potential and filled thereinside with an arc-extinguishing gas, at least one breaking unit disposed within said tank along the axis of said tank, a first support means for supporting said breaking unit in electrically insulated relation from said tank, a capacitor unit disposed within said tank in substantially axially aligned relation with said breaking unit with its axis extending along an extension of the central axis of said breaking unit, said capacitor unit including a plurality of capacitor elements and a hollow cylindrical insulating support member for receiving said capacitor elements therein, a second support means for supporting a line side conductor of said breaking unit in electrically insulated relation from said tank and for receiving impact forces due to a closing operation of the breaking unit, means for electrically connecting one end of said capacitor unit to the line side conductor of said breaking unit while allowing movement of said line side conductor due to said impact forces, and means for mechanically fixedly connecting the other end of said capacitor unit to said tank.

4,239,949

SELF-EXTINGUISHING TYPE CIRCUIT INTERRUPTER

Masami Kii; Yoshihiro Ueda, and Koji Ibuki, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,548
Claims priority, application Japan, Mar. 24, 1977, 52/32917; Mar. 24, 1977, 52/32918
Int. Cl.³ H01H *33/74*
U.S. Cl. 200—148 R **5 Claims**



1. A circuit interrupter, comprising: a casing for containing an arc extinguishing gas in use; a pair of separable electrical contact elements disposed within said casing, said contact elements having a contacting position wherein said contact elements are in physical contact, and at least one of said contact elements being movable to separate said contact elements and establish an electric arc in use between said separable contact elements; arc containing means comprising a chamber with said contact elements disposed therein for containing an electric arc established in use upon separation of said contact elements; a first pressure chamber opening into said arc containing chamber for storing arc extinguishing gas at a raised pressure raised by the energy of the arc established between the separated contact elements and for puffing the arc extinguishing gas into the arc containing chamber at the raised pressure to extinguish the arc when the arc current decreases sufficiently close to zero; at least a second pressure chamber for storing arc extinguishing gas at a raised pressure and having an opening which opens into said arc containing chamber for puffing the arc extinguishing gas at the raised pressure to extinguish the arc when the arc current decreases sufficiently close to zero; and gas flow control means comprised of said movable contact element for closing said first and second pressure chambers when said contact elements are in the contacting position, for opening said first pressure chamber when

said contact elements separate and an arc is formed therebetween to increase the gas pressure within said first chamber, for releasing the gas at a raised pressure from said first chamber through said arc containing chamber to effectuate a first blast of high pressure gas and extinguish the arc within said arc containing chamber as said contact elements further separate, and for releasing the gas at a raised pressure from said second chamber through said arc containing chamber to effectuate a second blast of high pressure gas and extinguish any remaining arc within said arc containing chamber as said contact elements separate still further.

4,239,950

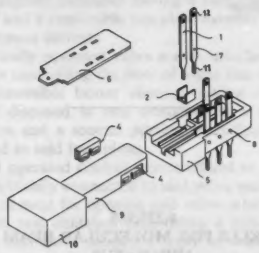
PUSHBUTTON SWITCH

Klaus Hinze, and Klaus B. Wisskirchen, both of Berlin, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 15,951

Int. Cl.³ H01H *15/09, 15/06, 15/22, 1/42*

U.S. Cl. 200—254 **3 Claims**



1. A pushbutton switch comprising, in combination:

a longitudinally extending housing having at least a pair of cavities therein for receiving fixed contacts;

a slider movably mounted in said housing and in the longitudinal direction of said housing;

a pair of longitudinally spaced U-shaped fixed contacts respectively fixedly mounted in said cavities, each of said U-shaped fixed contacts having a base portion engaging the bottom of the respective cavity and having at least one slot in said base portion for receiving a blade contact therein;

a U-shaped movable contact mounted to said slider for receiving and conductively engaging one leg of said U-shaped fixed contacts between the pair of legs of said U-shaped movable contact; and,

a pair of blade contacts respectively extending through and conductively engaging said slot of said U-shaped contacts and extending beyond the housing in opposite directions.

4,239,951

MULTISPOT GRID-WELDING MACHINE

Hans Gött; Josef Ritter; Klaus Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwickoungs-Gesellschaft mbH, Graz, Austria

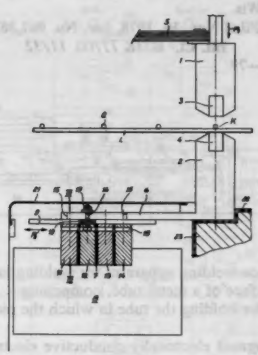
Filed Jan. 17, 1979, Ser. No. 4,228

Claims priority, application Austria, Jan. 20, 1978, 436/78

Int. Cl.³ B23K *11/32*

U.S. Cl. 219—56 **3 Claims**

1. In a multispot mesh welding machine having a welding zone and defining a working plane of the mesh and having a plurality of busbars extending across said machine transversely to the working plane, said mesh welding machine further comprising a row of electrode holders on one side of said working plane of said mesh, each of said electrode holders having a supporting surface and being adapted to be in operative connection with an adjustable switching device movable with respect to a corresponding electrode holder, said switching device being adapted to connect said electrode holder to a selected one of said busbars or to disconnect said electrode holder from all of said busbars, the contact surfaces of said busbars and the supporting surfaces of said electrode holders being arranged in staggered relation with respect to one another, each of said electrode holders being provided with a



contact tongue, said contact tongue protruding beyond the welding zone and extending across the contact surfaces of all of said busbars and being operatively connected to said adjustable switching member, said switching member being located between said contact tongue and the contact surfaces of said busbars.

4,239,952

ELECTRODE WIRE EDM APPARATUS

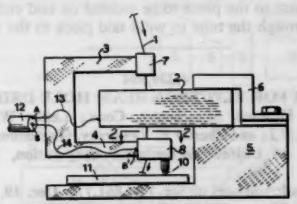
Heinz Rhyner, 25, chemin de la Naz, Bernex, Geneva, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Apr. 2, 1979, Ser. No. 26,446

Claims priority, application Switzerland, Apr. 14, 1978, 4013/78

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 W **2 Claims**



1. In a device for applying current pulses across a machining zone between an electrode wire and an EDM workpiece in an EDM apparatus wherein said electrode wire and said workpiece are displaced one relative to the other according to a predetermined cutting path cut by said electrode wire in said workpiece, said electrode wire being stretched and displaced along its longitudinal axis between a pair of spaced apart guide arms, said device comprising a first sliding contact mounted on one of said guide arms in engagement with said electrode wire and connected to a terminal of a pulse generator and a second sliding contact mounted on said one of said guide arms proximate said first sliding contact, the improvement comprising at least one capacitor supported proximate said first and second contacts and connected across said first and second contacts, and a metallic electrically conductive plate mounted on the

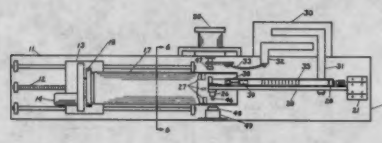
frame of said EDM apparatus and electrically connected to said workpiece, said second contact being in electrical sliding contact with the surface of said plate.

4,239,953

RESISTANCE WELDING APPARATUS

John C. Bock, Madison, Wis., assignor to Bock Corporation, Madison, Wis.

Filed Nov. 16, 1978, Ser. No. 961,365
Int. Cl.³ B23K *11/00, 11/32*
U.S. Cl. 219—79 **5 Claims**



1. Resistance welding apparatus for welding metal pieces to the inside surface of a metal tube, comprising:

(a) means for holding the tube in which the pieces are to be welded;

(b) an elongated electrically conductive electrode arm rigidly cantilever mounted at one end to allow insertion into the tube in which the pieces are to be welded, said electrode arm being selectively flexible in one direction normal to its length to allow its free end to flex more easily in the one said selected direction;

(c) feeding means for feeding a plurality of the pieces to be welded in single file along said electrode arm to the free end of said arm;

(d) an end support mounted to and electrically connected to the free end of said electrode arm for receiving and holding the pieces to be welded in proper position for welding to the inside of the tube;

(e) a drive cylinder mounted to said electrode arm and having a plunger, said drive cylinder being mounted to said electrode arm in position to have said plunger press against the inside surface of the tube to drive said electrode arm in its direction of selected flexibility such that pieces to be welded held by said end support are driven into firm contact with the inside surface of the tube; and

(f) means for passing an electrical current through said electrode arm to the piece to be welded on said end support, and through the tube to weld said piece to the tube.

4,239,954

BACKER FOR ELECTRON BEAM HOLE DRILLING

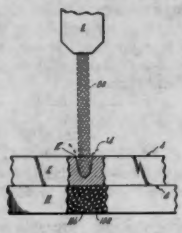
Curtiss G. Howard, Manchester, Conn.; Lester W. Jordan, Cranston, R.I., and Chester E. Yaworsky, Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 861,776, Dec. 19, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,594
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 EH **12 Claims**

1. A method for drilling a hole with an energy beam, such as an electron beam, through a workpiece having an entrance surface toward which the beam propagates and through which it first penetrates, and an exit surface which the beam last penetrates, comprising:

(a) intimately contacting a backer with the exit surface, the backer being characterized by a particulate bonded together with a binder, the particulate and binder having properties which avoid forming reaction products deleterious to the workpiece during hole drilling and the backer being further characterized by being adapted to removal, at least in part, as a liquid after drilling;

(b) directing an energy beam onto a portion of the entrance surface with an intensity sufficient to produce a hole in the workpiece, penetrate the exit surface, and generate within the backer gaseous products sufficient to expel molten workpiece material from the hole at the entrance surface in a direction opposite to the beam propagation; and



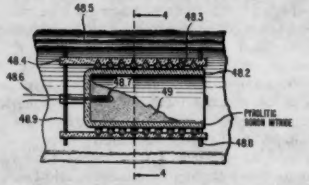
(c) removing the backer by converting it to at least a partial liquid state with a means which does not adversely affect the workpiece.

4,239,955

EFFUSION CELLS FOR MOLECULAR BEAM EPITAXY APPARATUS

Alfred Y. Cho, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 755,663, Dec. 30, 1976, Pat. No. 4,137,865. This application Oct. 30, 1978, Ser. No. 956,065
Int. Cl.³ H01L *21/203;* H05B *3/06*
U.S. Cl. 219—271 **1 Claim**



1. A molecular beam epitaxy apparatus comprising an evacuated growth chamber and at least one improved effusion cell for generating a molecular beam from a source material, said improved effusion cell comprising:

an elongated cylindrical Pyrolytic Boron Nitride crucible having an opening at one end thereof to permit egress of said beam,

a heating coil surrounding and in heat transfer relationship with said crucible,

a plurality of ceramic rods, extending essentially parallel to the cylinder axis and having notches along their length, for engaging said coil and firmly pressing said coil onto the outer surface of said crucible;

a retaining ring to secure said ceramic rods near said one end of the crucible,

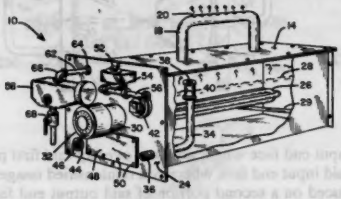
an apertured disc to secure said ceramic rods near the other end of the crucible; and

a radiation heat shield surrounding the crucible, coil and rod assembly.

4,239,956
ELECTRIC STEAM HUMIDIFIER

Bernard W. Morton, Minnetonka, Minn., assignor to Dri-Steem Humidifier Co., Inc., Hopkins, Minn.

Filed Jul. 31, 1978, Ser. No. 929,271
Int. Cl.³ F24F 6/18
U.S. Cl. 219—272 **5 Claims**



1. A humidifier unit for use with a forced air heating system comprising:

(a) a rectangular container having a face plate on one end thereof and a removable top plate member having vapor outlet means therein;

(b) electrically operated valve means attached to said face plate for controlling the flow of water into said container;

(c) an immersible heater element having a first portion thereof disposed in said container at a predetermined elevation and a second portion extending through and attached to said face plate;

(d) a float operated control device affixed to said face plate and electrically connected to said valve means and to said heater element for opening said valve when the depth of water in said container falls below a first level and for closing said valve when the depth of water in said container reaches a second predetermined level, said control device opening the circuit to said heater element when the depth of the water in said container falls a predetermined distance below said first level;

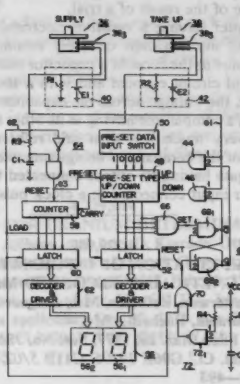
(e) a drain tube member having an open upper end mounted within said container and having the other end thereof extending outwardly therefrom, said drain tube having an aperture formed through the side wall thereof a predetermined distance below the upper open end thereof, the top of the aperature in said drain tube corresponding to said second predetermined level and the bottom of said aperature corresponding to said third predetermined level.

4,239,957
DISPLAY APPARATUS FOR TAPE RUNNING POSITIONS

Ken Satoh, and Kenzi Furuta, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1978, Ser. No. 944,061
Claims priority, application Japan, Sep. 30, 1977, 52-117556
Int. Cl.³ H03K 21/18
U.S. Cl. 235—92 DN **14 Claims**

1. A display apparatus for tape running positions comprising: a tape transport system in which the rotational speeds of a first reel and a second reel change in accordance with the amount of tape running, a first signal generator for producing m number of pulses constituting a first signal e_1 for each revolution of the first reel, a second signal generator for generating n number of pulses constituting a second signal e_2 for each revolution of the second reel, counter means for counting the repetitive number of first signals e_1 occurring during one period of second signal e_2, data preset means for providing to the counter means preset data to offset the count value counted by the counter means at an initial stage of tape running, in order to assign the display depending on the first signal e_1 sensed during one period of the second signal e_2 at the initial stage of tape running to the start point of the tape running position, and display means connected to a count output circuit of the counter means in order to perform a numerical display corresponding to the tape running amount, said counter means comprising an up/down counter preset by a third signal e_3 having the same period as of said second signal e_2 and occurring behind the second signal e_2, a logic circuit for providing a set signal when the count output of said up/down counter becomes zero in order that, upon completion of the cancelling operation of the count by the preset data provided by said data

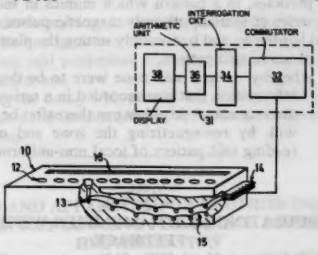


preset means, the display at the start point of the tape running position is rendered zero; a flip-flop set by the set signal of said logical circuit and reset by the second signal e_2, and a gate circuit for applying the first signal e_1 to the down-count input terminal of said up/down counter when said flip-flop is reset, and for applying the first signal e_1 to the up-count input terminal of said up/down counter when said flip-flop is set.

4,239,958
APPARATUS FOR USE IN ORDERING TRIALS

David W. Pritty, Glasgow, Scotland, assignor to University of Strathclyde, Glasgow, Scotland

Continuation-in-part of Ser. No. 830,015, Aug. 30, 1977, abandoned. This application Mar. 13, 1979, Ser. No. 20,248
Int. Cl.³ G06M 3/14
U.S. Cl. 235—92 AC **4 Claims**



1. In apparatus for use in conducting Ordering Trials,

a set of counters respectively having unique characteristics the sequential ordering of which is to be undertaken by a subject,

a holder having a set of identical locations respectively for receiving a said counter,

each counter comprising at least one electrical circuit element the electrical characteristic of which uniquely identifies that counter, the holder comprising a plurality of electrical conductors associated respectively with said locations, interengageable electrical terminals provided at said locations and on the counters such that when a particular location receives a particular counter the electrical

circuit element of that counter is connected electrically to the pertaining electrical conductors, read-out means connected to said electrical conductors, said read-out means incorporating interrogation circuitry which is operable to determine the electrical characteristics of the counters in the respective locations, and an arithmetic unit operating according to a predetermined algorithm and connected to the output of the interrogation circuitry to provide a measure of the result of a trial,

each counter having a resistive electrical circuit element, and said interrogation circuitry comprises a reference impedance in the form of a capacitor connectible in series with said circuit element and with a source of reference voltage, the voltage across the capacitor being fed as one input of a comparator having as its other input a voltage of value very much less than said reference voltage, the output of the comparator being connected to a two-input AND gate having its output connected to a counter, and its other input connected to a clock pulse generator.

4,239,959

PERPETUATION OF INFORMATION IN MAGNETICALLY RECORDED MEDIUM

Robert P. Gutterman, Bethesda, Md., assignor to General Kinetics Incorporated, Rockville, Md.

Filed Mar. 23, 1977, Ser. No. 780,537
Int. Cl.[3] G06K *19/06*; G11B *5/02, 5/74*
U.S. Cl. 235—493 **10 Claims**

1. A method for perpetuating information in a magnetically recorded medium, in which a support bearing a zone of ferromagnetic particles substantially homogeneously distributed in a layer of substantially uniform thickness, firm, softenable plastic carrier has been written upon with a series of spatially discrete magnetic pulses,

said method comprising:

(a) softening the plastic carrier sufficiently to permit relative translational movement of said particles, whereby relative translational movement will occur due to magnetic forces among the particles, causing local non-uniformities in the homogeneity of distribution of said particles, in a pattern which mimics in said zone said series of spatially discrete magnetic pulses; and

(b) hardening and irreversibly setting the plastic carrier to preserve said pattern,

whereby, even if said zone were to be degaussed, the information that was recorded in a series of spatially discrete magnetic pulses can thereafter be retrieved at will, by remagnetizing the zone and magnetically reading said pattern of local non-uniformities.

4,239,960

RECIRCULATING LIGHT AMPLIFIER WITH OPTICAL FEEDBACK

Filippo B. Galluppi, North Hills, N.Y., assignor to Venus Scientific Inc., Farmingdale, N.Y.

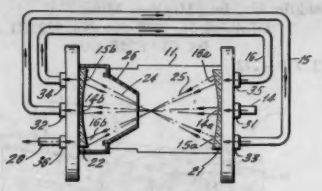
Filed Jul. 30, 1979, Ser. No. 61,845
Int. Cl.[3] H01J *31/50*
U.S. Cl. 250—213 VT **12 Claims**

1. A light amplification device, comprising:

a light intensifier tube including an input end face and an output end face, said light intensifier tube intensifying an image input onto said input end face and reproducing said image in intensified form on said output end face;

means for inputting an image to be intensified onto a first portion of said input end face whereby an intensified image is reproduced on a first portion of said output end face; and

optical feedback means for feeding back said intensified image reproduced on said output end face and for inputting said intensified image onto a second portion of said



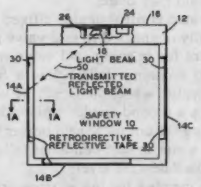
input end face which does not overlap said first portion of said input end face whereby a reintensified image is reproduced on a second portion of said output end face.

4,239,961

PHOTOELECTRIC LIGHT CURTAIN USING RETROREFLECTOR

Theodore Lasar, 40 First Ave., New York, N.Y. 10009

Filed Jan. 23, 1979, Ser. No. 5,721
Int. Cl.[2] G01D *21/04*
U.S. Cl. 250—221 **8 Claims**



1. A relatively low-cost photoelectric machine access safety device comprising:

(a) an integral rectangular support structure having separable sides with each of three sides having an inside surface enclosing a guarded area through which an associated machine is accessed;

(b) retrodirective reflective means mounted in a continuous path on each of the three inside surfaces and facing the guarded area;

(c) integral photoelectric light transmission and receiving means mounted on the inside surface of the fourth side for generating a control signal when transmitted light is not received;

(d) rotatable mirror means positioned adjacent the mid-point on the inside surface of the fourth side and adapted to reflect a light beam transmitted by said photoelectric means directly to said retrodirective reflective means at a varying incidence angle and back along the same light path directly to said photoelectric means;

(e) rotating means mounted on the fourth side for rotating said rotatable mirror so that the reflected light beam scans all of the guarded area whereby any body within the guarded area will interrupt the scanning light beam causing said photoelectric means to generate a control signal;

(f) control means mounted on said support structure coupled to said photoelectric means and responsive to a control signal for stopping the associated machine accessed through the guard area; and

(g) U-shaped retrodirective reflective means mounted between said rotatable mirror means and the fourth side for reflecting the light beam, when said rotatable mirror

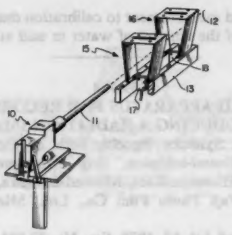
means is scanning the fourth side, for preventing false operation of said control means.

4,239,962

SUNSHIELD AND LIGHT DIFFUSER

Kenneth L. Oehler, Box 840, 501 Noton St., Pflugerville, Tex. 78660

Filed Oct. 12, 1978, Ser. No. 950,686
Int. Cl.³ G06M *7/00*
U.S. Cl. 250—222 R **6 Claims**



1. An apparatus for use in combination with a ballistic characteristic measuring system of the type having first and second photosensitive elements, means for mounting the elements along the path of a projectile in an environment exposed to daylight with the light responsive portions of the elements directed toward segments of the path so that each of the photosensitive elements responds to changes in light incident thereon to produce a signal evidencing the passage of a projectile, and circuit means connected to the photosensitive elements for measuring the time interval between changes in the light level, the apparatus comprising

at least one generally U-shaped light shield means for preventing direct sunlight illumination of the projectile path segments toward which the light sensitive portions of the photosensitive elements are directed; and

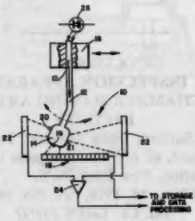
means for mounting said at least one light shield means in a position to generally surround said path segments between the source and said light sensitive portions.

4,239,963

FIBER OPTIC ACCELEROMETER

Rudolf R. August, Laguna Beach; Virgil H. Strahan, Orange; Kenneth A. James, Corona Del Mar, and Donald K. Nichols, Long Beach, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 26, 1978, Ser. No. 928,222
Int. Cl.² G01D *5/34*
U.S. Cl. 250—231 R **9 Claims**



1. An accelerometer comprising at least one elongated optical fiber, said accelerometer including:

a support structure, a first end of said optical fiber suspended from said support structure,

a light source positioned in proximity to the first end of said optical fiber to supply light thereto,

the second end of said optical fiber having a multiport terminal formed thereat to receive light transmitted from said source thereof,

a first light sensor positioned adjacent the second end of said optical fiber and responsive to light transmitted therethrough, and

at least a pair of additional light sensors, each of said pair of additional light sensors positioned adjacent different ports of said multiport terminal and responsive to respective light signals emitted therefrom,

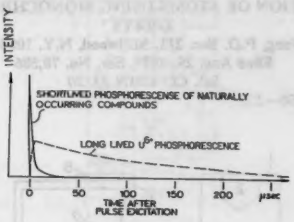
said first light sensor and said additional pair of light sensors providing an indication of the position of the second end of said optical fiber when forces that are applied to said support structure cause said optical fiber to oscillate.

4,239,964

METHOD FOR URANIUM DETERMINATION

John C. Robbins, Alliston, and John D. Kinrade, Ottawa, both of Canada, assignors to Scintrex Limited, Concord, Canada

Continuation-in-part of Ser. No. 879,647, Feb. 21, 1978, which is a continuation-in-part of Ser. No. 693,212, Jun. 4, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 955,787
Int. Cl.² G01V *5/00*; G01N *21/38*
U.S. Cl. 250—255 **26 Claims**



1. A method of detecting uranium compounds in a translucent sample through utilization of the anomalously long life time of phosphorescence of the uranyl ion in concentration levels of less than about one part per million, comprising the steps of:

exciting the uranyl ions in the sample by projecting electromagnetic energy;

terminating said projection of electromagnetic energy into the sample; and

measuring the decay with time of the uranium phosphorescence after the termination of the incident electromagnetic radiation.

4,239,965

METHOD AND APPARATUS FOR NEUTRON INDUCED GAMMA RAY LOGGING FOR DIRECT POROSITY IDENTIFICATION

Donald W. Oliver, and Richard B. Culver, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 5, 1979, Ser. No. 17,307
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—270 **13 Claims**

4. A method of well logging, comprising the steps of:

irradiating the region surrounding a borehole with high energy neutrons;

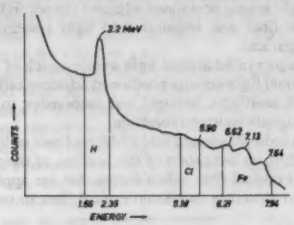
detecting radiations emanating from said irradiated region;

generating first electrical signals responsive to said detected radiation relating to the hydrogen content of said irradiated region;

generating second electrical signals responsive to said detected radiation relating to the chlorine content of said irradiated region;

generating third electrical signals responsive to said detected radiation relating to the iron content of said irradiated region;

combining said first and second electrical signals to provide



a fourth electrical signal representing a salinity corrected hydrogen indications; and

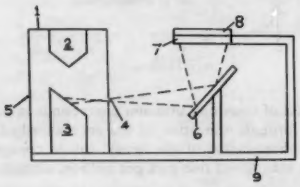
combining said third and fourth electrical signals to provide a porosity indication substantially free of borehole salinity and formation salinity effects.

4,239,966

DETECTION OF ATOMS USING MONOCHROMATIC X-RAYS

Chia G. Wang, P.O. Box 211, Millwood, N.Y. 10546

Filed Aug. 29, 1979, Ser. No. 70,586
Int. Cl.³ G01N *23/20*
U.S. Cl. 250—275 **11 Claims**



6. Apparatus for detecting, in a specimen, atoms, of an element having an atomic number of at least 20, comprising a source of monochromatic X-rays having a wavelength to induce an inner shell ionization of said atoms with subsequent auger cascade, and means for detecting the auger electrons emitted by the cascade, wherein the detecting means is a photographic emulsion which includes substantially no atoms of the element, the photographic emulsion being a layer disposed closely adjacent the specimen.

4,239,967

TRACE WATER MEASUREMENT

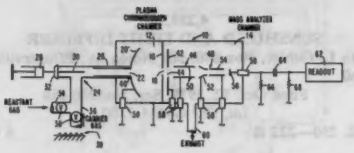
Timothy W. Carr, Poughkeepsie; Edwin A. Corl, Wappingers Falls, and Carl G. Majtenyi, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,959
Int. Cl.³ B01D *59/44*
U.S. Cl. 250—281 **8 Claims**

1. A method of measuring the amount of water in an atmosphere comprising the steps of:

treating the atmosphere in such a manner as to produce a number of $O(H_2O)_2^-$ ions that is proportional to the amount of water in said atmosphere;

measuring the amount of said ions contained in said atmosphere; and



comparing said measurement to calibration data to obtain an indication of the amount of water in said atmosphere.

4,239,968

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING A RADIATION IMAGE

Noboru Kotera; Syusaku Eguchi, both of Odawara; Junji Miyahara, Minami-ashigara; Seiji Matsumoto, Minami-ashigara, and Hisatoyo Kato, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 12, 1979, Ser. No. 57,091
Claims priority, application Japan, Jul. 12, 1978, 53-84744
Int. Cl.³ G03C *5/16*
U.S. Cl. 250—327.1 **10 Claims**

1. A method for recording and reproducing a radiation image comprising the steps of (i) causing a visible ray- or infrared ray-stimulable phosphor to absorb a radiation passing through an object, (ii) stimulating said phosphor with stimulation rays selected from visible rays and infrared rays to release the energy of the radiation stored therein as fluorescent light, and (iii) detecting said fluorescent light characterized in that said phosphor is at least one phosphor selected from the group of alkaline earth metal fluorohalide phosphors represented by the formula

$$(Ba_{1-x}M_x^{II})FX:yA$$

wherein M^{II} is at least one divalent metal selected from the group consisting of Mg, Ca, Sr, Zn and Cd, X is at least one halogen selected from the group consisting of Cl, Br and I, A is at least one element selected from the group consisting of Eu, Tb, Ce, Tm, Dy, Pr, Ho, Nd, Yb and Er, and x and y are numbers satisfying the conditions of $0 \leqq x \leqq 0.6$ and $0 \leqq y \leqq 0.2$, and that the wavelength of said stimulation rays is not less than 500 nm.

4,239,969

ARTICLE INSPECTION APPARATUS WITH PROTECTIVE CHAMBER HAVING ARTICLE-LOADING FACILITY

David J. Haas, Suffern; Nick Galetta, Yonkers, and Adolf Juner, City Island, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,434
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—359 **23 Claims**

1. An article inspection apparatus capable of continuous operation for at least part of the operating time thereof, comprising:

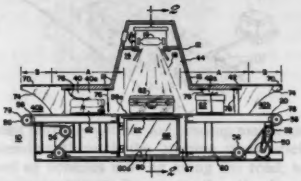
(a) chamber defining means that are substantially impermeable to x-rays and that comprise a first portion comprising

entry and exit portions and a second portion located between said entry and exit portions;

(b) an x-ray source for directing x-rays to the chamber at said second portion of said means;

(c) flexible x-ray shielding means disposed at said entry and exit portions;

(d) said entry and exit portions both comprising respective first and second regions, said first regions being removed from said chamber second portion and said second regions being located between said second portion and their respective said first regions, said second regions comprising completely enclosed tunnels communicating with said second portion and with said first regions, said first regions comprising top and partial side wall members with said top wall members extending out for the entire length of said first regions, and said side wall members having a cutaway at the end thereof more remote from said second portion, said cutaway extending downwardly from said top wall toward said second region;



(e) an article transport system having a first part thereof disposed at said chamber second portion and at least a second part thereof disposed at said first chamber portion, said article transport system serving to carry said article through said chamber second portion; and

(f) means for converting said x-rays passing through said chamber second portion and said article into a visual image.

4,239,970

RADIONUCLIDE GENERATOR

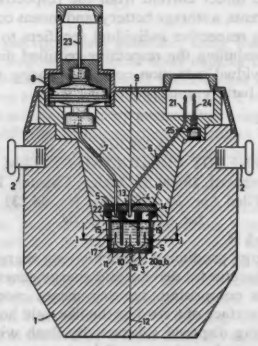
Wolfram Eckhardt, Tegernheim, and Johann Hausladen, Regensburg, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 4, 1979, Ser. No. 937

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800496

Int. Cl.³ G21G *1/00*

U.S. Cl. 250—432 PD **8 Claims**



1. Apparatus for the generation of a daughter radionuclide from a parent nuclide comprising a support medium for adsorption of the parent nuclide, means for containing said support medium, inlet means for introducing eluant and outlet means for removing eluate, wherein the containing means defines a curved path for the passage of eluant through the support medium between inlet and outlet means.

4,239,971

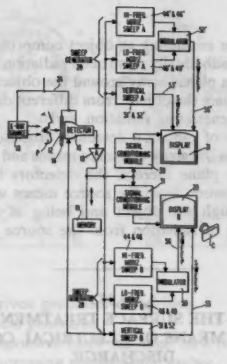
SIMULTANEOUSLY DISPLAYING VARYING TOMOGRAPHIC IMAGES OF DENTAL ARCH WITH SINGLE PANORAMIC X-RAY EXPOSURE

Robert H. Cushman, Princeton, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 5, 1979, Ser. No. 82,373

Int. Cl.³ G03B *41/16*

U.S. Cl. 250—439 P **16 Claims**



1. A method of providing simultaneous multiple panoramic tomographic images of focal trough of a patient's dental arch by means of exposure thereto of X-radiation from a single continuous X-ray panoramic scan of said dental arch wherein said patient is seated in a chair capable of movement in the path of said X-radiations which are generated from a stationary X-ray origin point traveling in a circular orbit about said patient's dental arch, said X-radiations passing through a collimating slot immediately subsequent to passing through said dental arch, the combination therewith of the improvement comprising the steps of

detecting said X-radiations passing through said slot by detector sweeps to form electric signals proportional to intensity of the detected X-radiations, said electric signals being representative of a slot image of said dental arch being instantaneously panoramically scanned by said X-radiations,

directing said signals representing said instantaneous slot image into an oscilloscope display screen while simultaneously sweeping successive instantaneous slot images representative of said dental arch being panoramically scanned across length of said display screen in a period of time substantially equivalent to period of time of said circular orbit by means of a wobbulated sweep generator,

synchronizing said detector sweeps and display sweeps to insure proper relative positioning of said slot images on said display screen, and

adjusting said wobbulated sweeps on said display screen to sharply focus a tomographic area of interest of said dental arch.

4,239,972

DEVICE FOR COMPUTED TOMOGRAPHY

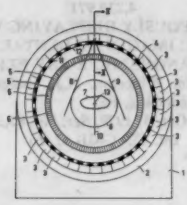
Wolfgang Wagner, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,434

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1978, 2817912; May 19, 1978, 2821870

Int. Cl.³ G03B *41/16*

U.S. Cl. 250—445 T 14 Claims



1. A device for examining an object comprising:

a plurality of individually controlled radiation source means, disposed in a planar array around the object, which function to irradiate the object, from different directions, with a beam of penetrating radiation, and

a closed array of radiation detectors, disposed around the object within the array of source means and lying substantially in the plane thereof, the detectors functioning to measure radiation from the source means which is transmitted through the object and being at least partially transmissive of radiation from the source means to the object.

4,239,973

DEVICE FOR THE SURFACE TREATMENT OF FILM WEBS BY MEANS OF ELECTRICAL CORONA DISCHARGE

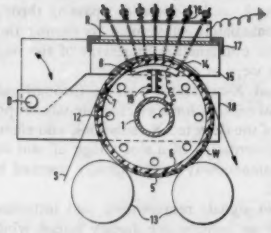
Andreas Kolbe, Wiesbaden, and Peter Dinter, Hallgarten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 965,468

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753750

Int. Cl.³ B01J *19/12*

U.S. Cl. 250—531 19 Claims



1. A device for the surface treatment of film webs by means of an electrical corona discharge in order to render the surface suitable for printing or to increase its bonding strength, comprising:

at least one grounded counter-electrode comprised of a point electrode;

at least one roll electrode rotatably positioned adjacent to said counter-electrode, said roll electrode comprising an outer tube comprised of dielectric material, an inner tube comprised of dielectric material removably fitted coaxially inside of said outer tube and a plurality of electrodes carried on the outside surface of said inner tube; and

means for supplying an A.C. voltage to said electrodes.

4,239,974

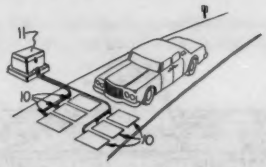
ELECTRICAL POWER GENERATING SYSTEM

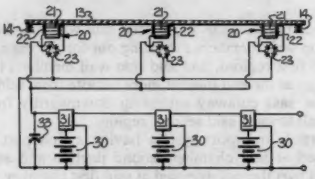
Robert E. Swander, 1413 Hill Rd. - Apt. 13, and Richard E. St. Pierre, 436 Westham Ridge Rd., both of Charlotte, N.C. 28210

Filed Feb. 9, 1979, Ser. No. 10,521

Int. Cl.³ H02P *9/04;* H02J *7/00;* H02K *35/00*

U.S. Cl. 290—1 R 4 Claims





1. A generating system for producing electrical power from otherwise wasted energy expended by motor vehicles moving along a roadway, said generating system comprising a plate mounted for vibrational movement in a roadway so that motor vehicles moving along a roadway and passing over the plate will impart vibrational movement to the plate, a plurality of individual induction coils cooperating with said plate, each comprising a permanent magnet and a cooperating winding at least one of said magnet and said winding being mounted for direct engagement by said plate to provide reciprocating movement relative to the other upon vibrational movement of said plate for thereby generating an induced oscillating current in the winding as a result of the vibrational movement of said plate, respective individual rectifiers connected to each of said individual induction coils and each being operable for producing a rectified direct current from the respective oscillating electrical currents, a storage battery, and means connecting the outputs of the respective individual rectifiers to said storage battery for combining the respective rectified direct currents from the individual induction coils and storing the electrical power in said battery until needed.

4,239,975

ENERGY PRODUCING SYSTEM

Arthur B. Chiappetti, 10600 S. Oakley, Chicago, Ill. 60643

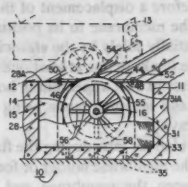
Filed Apr. 30, 1979, Ser. No. 34,231

Int. Cl.³ N02P *9/04*

U.S. Cl. 290—1 R 6 Claims

1. In an energy producing system having energy generating means and apparatus for driving said energy generating means, said apparatus comprising: housing means mounted in the ground at the surface of a road or the like, said housing having a top wall being disposed substantially flush with the upper surface of the road, said top wall having means defining an opening therein; movable means being mounted at least partially within said housing and at least partially extending

through said opening in the path of travel of wheels supporting the vehicles moving along the road for engaging the tires of the vehicles seriatim; and coupling means connected drivingly between said movable means and said generating means for transmitting the motion of said movable means to said generating means; said coupling means including a flywheel journaled for rotation about its axis for storing energy in response to said movable means; said movable means including a drum rotatably mounted about its axis and having a portion thereof ex-



tending at least partially within said housing means and at least partially extending through the opening transversely to the path of travel of vehicles moving along the road; said drum having a diameter substantially greater than the diameter of at least some of the tires of the vehicles rolling thereover; said drum including a plurality of elongated resilient strips extending axially along the outer periphery thereof for engagement with the tires of vehicles moving along the road, said strips being triangular in cross section and having a radially extending face and a sloping face.

4,239,976

FLOATING ELECTRIC GENERATOR USING THE DRIVING ENERGY OF WATER

Louis-Jean Collard, 16 Avenue Anatole France, 63130 Royat-Puy-De-Dome, France

Filed Mar. 29, 1978, Ser. No. 891,227

Claims priority, application France, Mar. 29, 1977, 77 10332; Feb. 21, 1978, 78 05781

Int. Cl.³ F03B *13/00*

U.S. Cl. 290—42 **21 Claims**

1. Floating electric power generator using water energy in the form of a hollow volumetric body capable of floating or navigating in a natural or artificial water-course and mounted for free rotation around a fixed horizontal shaft, the projecting ends of which are connected by means of moorings to a berthing station, while the periphery thereof includes blades for its rotational drive by the energy produced by the water stream,

characterized in that said body forms a rotary shell permitting internally by reason of its volumetric hollow section the mounting of a plurality of electric generators disposed in a plane, each one of said generators being connected mechanically by its stator to the fixed shaft while the rotor is driven in rotation by the periphery of said shell by means of a driving device for the production of electric power by the assembly of said generators,

characterized further in that the driving device of each generator is formed by a head mounted elastically at the end of a spindle that is returned elastically and associated with the rotor for abutting action on one of the faces of a flange connecting diametrally to the inside of the hollow section of the shell and bearing along the appropriate diameter in order to constitute a speed multiplying device,

characterized further in that the stator of each generator is hingedly mounted on the stationary shaft for the adjustable angular pivoting thereof in relation to the flange so that the driving head is presented along a circle of varying diameter for varying the speed.

4,239,977

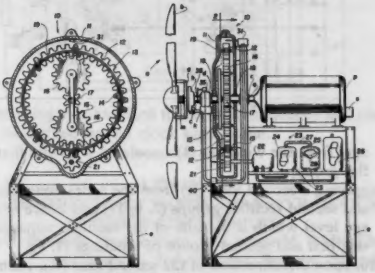
SURGE-ACCEPTING ACCUMULATOR TRANSMISSION FOR WINDMILLS AND THE LIKE

Warren A. Strutman, St. Louis, Mo., assignor to Lisa Strutman, Boone County; Lauren Strutman and Jerome A. Gross, both of St. Louis County, all of, Mo., a part interest to each

Filed Sep. 27, 1978, Ser. No. 946,199

Int. Cl.³ F03D *9/00*; H02P *9/04*; F16D *31/02*

U.S. Cl. 290—44 **11 Claims**



1. A wind-driven generator comprising

A. an electrical generator,

B. a wind-responsive rotor mounted on a rotor shaft,

C. a speed-increasing transmission having

(i) an input shaft coupled to the rotor shaft,

(ii) an output shaft coupled to the generator, and

(iii) alternative output means differentially coupled to the output shaft, together with

D. means, coupled to said alternative output means, to receive and accumulate energy, exerting and maintaining on said alternative output means a reactive torque increasing with rotation of said alternative output means caused by an increase of power delivered by the rotor,

whereby at a design operating condition, rotor shaft torque is so balanced by such reactive torque as to normally transmit power to said output shaft only, and rotor power fluctuations will cause or permit angular movements of the alternative output means in such sense as to smooth the delivery of power to the output shaft.

4,239,978

METHOD AND SYSTEM TO SUPPLY ELECTRICAL ENERGY TO A SELF-CONTAINED ELECTRICAL NETWORK AT MULTIPLE VOLTAGE LEVEL, MULTIPLE POWER RANGE, PARTICULARLY FOR MOBILE APPLICATION

Wolfgang Kofink, Aichwald, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,923

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810201

Int. Cl.³ H02J *1/00*

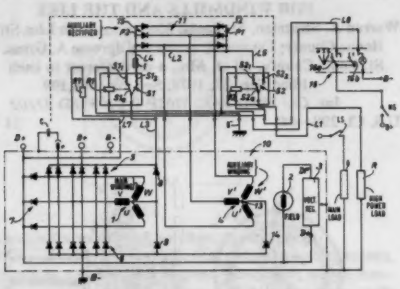
U.S. Cl. 307—16 **13 Claims**

1. In a self-contained electrical network having an a-c generator (10) having two groups of armature windings (1—U, V, W; 4—U', V', W');

two groups of rectifiers (5, 6; 11), one each being connected to a respective armature winding group to provide respective d-c outputs,

a method of supplying electrical energy at multiple voltage levels in multiple power ranges comprising, in accordance with the invention, the steps of selectively connecting the d-c outputs of the rectifier groups in series;

supplying a first load (Q) from a first group of rectifiers (5, 6) associated with a first group of armature windings (1) at a voltage level which is determined by the rectified voltages from the windings (1) associated with said first rectifier group;



supplying a second load (R) from the series connected first and second rectifier groups (5, 6; 11) and hence at a voltage level which is the sum of the rectified voltages from said first and second groups of windings (1, 4);

and, upon disconnection of the second load (R), connecting said second rectifier group (11) in parallel with said first rectifier group (5, 6) to supply the first load (Q) with power derived from both said windings (1, 4) and from both said rectifier groups.

4,239,979

MEMBRANE CONTACTOR

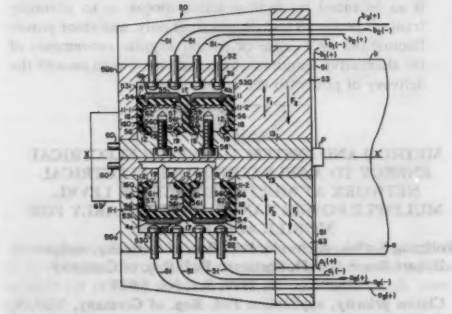
Maurice Chapuis, Sayat, and Jean-Yves Machat, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Nov. 29, 1978, Ser. No. 964,661

Claims priority, application France, May 12, 1977, 77 36796; Oct. 23, 1978, 78 30273

Int. Cl.³ H01H *35/34*

U.S. Cl. 307—118 **16 Claims**



1. Contactor comprising at least two fixed studs, at least one movable stud capable of making or breaking an electric contact between the two fixed studs, and at least one membrane which can deform under the action of a fluid, the movable stud being fastened to the membrane in such a manner that the movable stud is isolated from the two fixed studs in position of rest, characterized by the following features:

(a) the membrane comprises the following two parts:

at least one substantially nondeformable base and to which the movable stud is fastened; and

flanks which are elastic with respect to the base and firmly attached to the base, the deformation of the membrane being obtained substantially solely by stretching of the flanks, this deformation causing a displacement of the base and therefore a displacement of the movable stud;

(b) the return of the membrane to its position of rest being obtained substantially solely by the elasticity of the flanks;

(c) the base and the flanks define at least one cavity in which is arranged at least in part a membrane holder; the corresponding fixed and movable studs being located on the outside of this cavity;

(d) means are provided for introducing the fluid between the membrane and the membrane holder or for evacuating the fluid from between the membrane and the membrane holder;

(e) the base being in contact with the membrane holder only in its position of rest; and

(f) the membrane holder being capable of guiding the flanks during the deformation of the membrane.

4,239,980

INTEGRATED CIRCUIT HAVING AN OPERATION VOLTAGE SUPPLYING DEPLETION TYPE MISFET OF HIGH BREAKDOWN VOLTAGE STRUCTURE

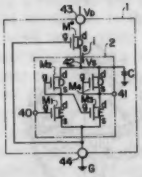
Akira Takanashi, Kokubunji, and Kenzo Masuda, Tokorozawa, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 4, 1978, Ser. No. 931,006

Claims priority, application Japan, Sep. 14, 1977, 52/109876

Int. Cl.³ H03K *19/094*

U.S. Cl. 307—205 **16 Claims**



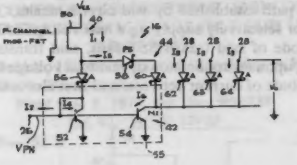
1. A monolithic semiconductor integrated circuit having a transistor circuit which includes a depletion type MISFET to the gate of which is applied a reference voltage,

characterized in that said transistor circuit includes a plurality of load MISFETs and a plurality of driving MISFETs, said depletion type MISFET being connected in series with at least one of said load MISFETs and at least one of said driving MISFETs between a power source voltage terminal and the reference voltage, the sources of said load MISFETs being connected to said reference voltage through the drain-source electric paths of said driving MISFET, the drains of said load MISFETs being connected commonly to the source of said depletion type MISFET, said depletion type MISFET having its drain connected to said power source voltage terminal, wherein said depletion type MISFET has a high breakdown voltage structure such that the breakdown voltage between its drain and the substrate is higher than the breakdown voltage across the junction between said substrate and the drains of said plurality of load MISFETs.

4,239,981
FAST SEMICONDUCTOR DIGITAL LOGIC INVERTER GATE

Rex J. Crookshanks, Palos Verdes Estates, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 760,514, Jan. 19, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,629
Int. Cl.³ H03K *19/20, 19/177*
U.S. Cl. 307—214 33 Claims



1. A logic inverter gate having an input with an input voltge thereat and an output with an output voltage thereat, the gate output conducting a current which varies nonlinearly as the input voltage varies between different first and second magnitudes, the gate including a first semiconductor junction having a given forward biased voltage drop, a second semiconductor junction different from the first junction and having a forward biased voltage drop different from the first junction and circuitry coupling the first and second junctions between the input and the output of the gate to establish a first voltage limit beyond which the gate input voltage cannot go and a second voltage limit different from the first limit beyond which the gate output voltage cannot go whenever the gate input is at the first voltage limit, the difference between the first and second voltage limits being controlled in accordance with the difference between the forward biased voltage drops of the first and second semiconductor junctions.

4,239,982
FAULT-TOLERANT CLOCK SYSTEM

T. Basil Smith, Sudbury; John R. Howatt, Waltham, and John F. McKenna, Jr., Gloucester, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

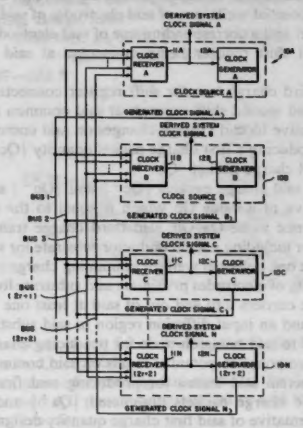
Filed Jun. 14, 1978, Ser. No. 915,469
Int. Cl.³ H03K *3/00*
U.S. Cl. 307—219 6 Claims

1. A fault-tolerant clock system which provides for correct derivation of system clock signals from a plurality of (2r+2) clock sources despite r failures of individual clock sources, where r is a positive integer, said system comprising,

a plurality of (2r+2) clock signal sources, each clock signal source comprising a clock receiver for providing a derived system clock signal and a clock generator for providing a generated clock signal,

each said clock receiver being responsive to the (2r+1) generated clock signals of only the other (2r+1) of said (2r+2) clock sources for providing a derived system clock signal having only the frequency components of the clock signals of the unfailed clock sources of said (2r+1) clock sources and which is in phase with the unfailed clock sources,

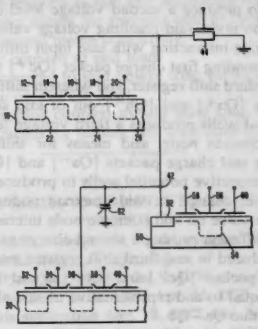
each of said clock generators being responsive to the derived system clock signal from its respective receiver for producing a generated clock signal which is presented to the clock receivers of the other said clock sources, said generator being synchronized to the same frequency and phase as its derived system clock signal input.



4,239,983
NON-DESTRUCTIVE CHARGE TRANSFER DEVICE DIFFERENCING CIRCUIT

Nathan P. Edwards, Darien, Conn., and James M. White, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,211
Int. Cl.³ G11C *19/28;* H01L *29/78*
U.S. Cl. 307—221 D 7 Claims



1. A charge transfer device differencing circuit for producing a quantity Qc of electrical charge carriers equal to and representative of the algebraic difference between the values of two original quantities of electrical charge carriers Qa and Qb comprising means for producing a first pair of discrete charge packets $|Qa^+|$ and $|Qa^-|$ representative of said charge quantity Qa and a second pair of discrete charge packets $|Qb^+|$ and $|Qb^-|$ representative of said charge quantity Qb,

first and second charge transfer shift registers having outputs connected to a common node and responsive respectively to said first and second pairs of discrete charge packets for producing voltage changes on said common node representative respectively of the combination of charge packets $|Qa^-|$, $|Qb^+|$, $|Qa^+|$ and $|Qb^-|$,

said first and second charge transfer device shift registers each including a semiconductor substrate for sustaining a

plurality of potential wells for containing electrical charge carriers and electrodes proximate said substrate for shifting quantities of electrical charge carriers into and out of said potential wells, one of said electrodes of said first shift register and a corresponding one of said electrodes of said second shift register being connected at said common node,

and a third charge transfer shift register connected to said first and second shift registers at said common node and responsive to said voltage changes on said common node for producing a first charge packet quantity $|Qc^+|$ and a second charge packet $|Qc^-|$,

wherein said charge packets $|Qc^+|$ and $|Qc^-|$ are representative of a value Qc which is equal to the algebraic difference value Qa–Qb, said third charge transfer shift register including a semiconductor substrate for sustaining at least one potential well for containing charge carriers, a plurality of electrodes proximate said substrate for shifting charge carriers into and out of said at least one potential well, and an input diffusion region in said substrate connected to said common node for producing charge carriers in response to potential levels on said common node, and therein said means for producing said first pair of discrete charge packets designated $|Qa^+|$ and $|Qa^-|$ representative of said first charge quantity designated Qa, and said second pair of discrete charge packets designated $|Qb^+|$ and $|Qb^-|$ representative of said second charge quantity designated Qb includes means for shifting charge packet $|Qa^-|$ and charge packet $|Qb^+|$ respectively into and out of said potential wells proximate said one of said electrodes of said first shift registers connected to said common node and said corresponding one of said electrodes of said second shift register connected to said common node wherein shifting charge packets $|Qa^-|$ and $|Qb^+|$ out of said respective potential wells produces a first voltage level change on said common node, said means for shifting thereafter shifting said charge packets $|Qa^+|$ and $|Qb^-|$ into said same respective potential wells to produce a second voltage level change on said common node, said resulting voltage value on said common node interacting with said input diffusion causing a corresponding first charge packet $|Qc^+|$ to be produced in said third shift register, and wherein shifting said charge packets $|Qa^+|$ and $|Qb^-|$ out of said same respective potential wells produces a third voltage level change on said common node, said means for shifting thereafter shifting said charge packets $|Qa^-|$ and $|Qb^+|$ into said same respective potential wells to produce a fourth voltage level change on said common node, said resulting voltage value on said common node interacting with said input diffusion causing a second charge packet $|Qc^-|$ to be produced in said third shift register, and wherein said charge packets $|Qc^+|$ and $|Qc^-|$ in said third shift register is equal to and representative of said algebraic difference value Qa−Qb.

4,239,984

SIGNAL SYSTEM

Isao Kondo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1978, Ser. No. 868,379
Claims priority, application Japan, Feb. 22, 1977, 52/18956
Int. Cl.³ H03K *5/08*
U.S. Cl. 307—237 **4 Claims**

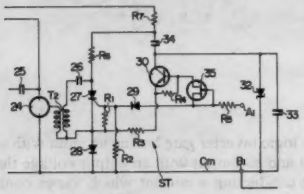
1. A signal system for controlling a switching element in response to a selectively applied switching signal, said switching element having first and second terminals and a control input, said switching element having a conductive path established between said control input and one of said first and second terminals responsive to said switching signal, said switching element requiring a control input signal exceeding a predetermined value applied to said control input to cause conduction between said first and second terminals, said signal system comprising:

input means for receiving said selectively applied switching signal;

circuit means for coupling said selectively applied switching signal from said input means to said conductive path normally established between said control input and said one of said first and second terminals of said switching element to establish a signal path therebetween;

transistor means having a signal receiving input and first and second electrodes, said signal receiving input and said first electrode of said transistor means being connected to said signal path established by said circuit means;

means for selectively supplying a bias voltage to the second electrode of said transistor means, said transistor means acting upon an application of said bias voltage to limit the magnitude of current between said first electrode and said



signal receiving input, said transistor means acting absent the application of said bias voltage to conduct current of increased magnitude between said signal receiving means and said first electrode;

field effect transistor means having a gate electrode and a drain and a source providing a drain to source signal path, said drain to source signal path being connected between said input means and the said signal receiving input of said transistor means, and

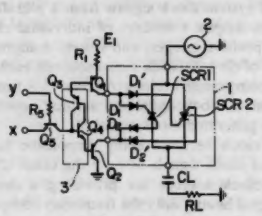
current controlling means coupled between said gate electrode and said source for limiting the magnitude of current in said drain to source signal path to a value which is less than said predetermined value of said control input signal necessary to cause said switching element to conduct, to prevent signals applied to said input means from rendering said switching element conductive absent the application of said bias voltage to said transistor means.

4,239,985

TRIGGER CIRCUIT FOR A THYRISTOR

Ichiro Ohhinata, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 28, 1978, Ser. No. 891,002
Claims priority, application Japan, Mar. 3, 1977, 52-34550
Int. Cl.³ H03K *17/72*
U.S. Cl. 307—252 G **9 Claims**



1. A trigger circuit for a thyristor comprising at least one of each of an NPN transistor and a PNP transistor for triggering a 4-terminal thyristor by feeding a collector current of said PNP transistor into a cathode gate thereof and taking out a

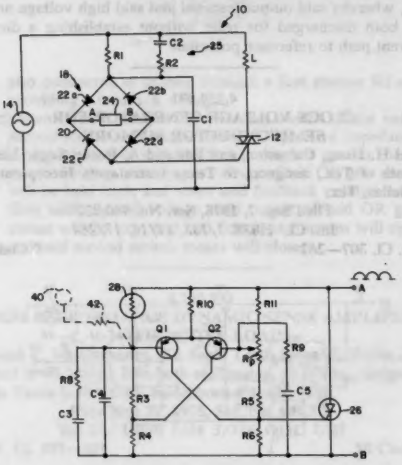
collector current of said NPN transistor from an anode gate thereof, a power supply connected to an emitter of one of said NPN and PNP transistors, and switching means having a self-holding function and connected between bases of said NPN and PNP transistors, wherein said switching means comprises a PNPN switch, an anode of said PNPN switch being connected to the base of said PNP transistor ad a cathode of said PNPN switch being connected to the base of said NPN transistor.

4,239,986

POWER CONTROL ARRANGEMENT AND CONTROL CIRCUIT ESPECIALLY SUITABLE FOR USE THEREWITH

Robert C. Dobkin, Hillsborough, Calif., assignor to Hyrbrinetics, Inc., Santa Rosa, Calif.

Filed Sep. 8, 1978, Ser. No. 940,733
Int. Cl.³ H03K *17/72*
U.S. Cl. 307—252 B **24 Claims**



1. A power control circuit, comprising:

(a) a cycling voltage supply adapted to supply power to a load;

(b) a gated switching device adapted to pass current in at least one of two opposite directions, said switching device and load being connected across said voltage supply;

(c) a capacitor connected with said voltage supply so as to be charged thereby;

(d) control means connected with said voltage supply and connecting said capacitor to the gate of said switching device under predetermined conditions to initiate discharge of said capacitor into said gate for producing a sufficiently large current pulse to actuate said device and cause it to conduct during a given cycle of said voltage supply said control means including means for initiating discharge of said capacitor for causing said switching device to conduct only at a time during said given cycle when the voltage is moving away from zero;

(e) means for reducing the voltage supplied to said control means for operation thereof; and

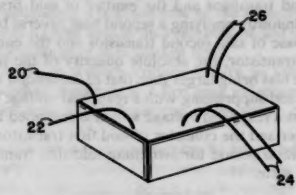
(f) means connecting said voltage supply to said control means in phase leading relationship compared to that of said switching device for causing said control means to initiate discharge of said capacitor for causing said switching device a conduct closer to zero voltage during said given cycle.

4,239,987

SWITCHING CIRCUIT FOR CONTROLLING VARIOUS APPLIANCES

Patrick M. Heffernan, Scottsdale, Ariz., assignor to Sumari Engineering, Tempe, Ariz.

Filed Oct. 13, 1978, Ser. No. 951,069
Int. Cl.³ H03K *17/72*
U.S. Cl. 307—252 B **7 Claims**



1. An electronic circuit for controlling the application of AC power to a load, comprising:

switching means for placing said circuit in "on" and "off" modes, said AC power being applied to said load during the "on" mode;

first means coupled to said switching means for controlling the duration of the "on" mode, said first means comprising:

a first transistor having a base coupled to said switching means;

a timing capacitor coupled to the collector of said first transistor, which timing capacitor is charged to a predetermined voltage when a positive voltage on the base of said first transistor is removed by said switching means, said capacitor triggering said switching means into its "off" mode when said predetermined voltage is reached; and

resistive means coupled to said timing capacitor for controlling its rate of charge; and

second means coupled to said first means and responsive to said switching means for applying said AC power to said load, said second means comprising:

a power triac coupled to said load;

a pilot triac coupled to said power triac for switching said power triac on and off; and

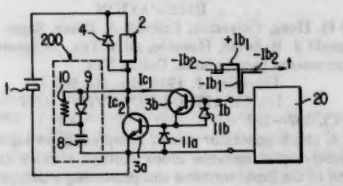
a second transistor coupled to said pilot triac and to said switching means for turning said pilot triac on.

4,239,988

TURN OFF METHOD FOR POWER TRANSISTOR SWITCH

Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 701,495, Jul. 1, 1976, abandoned, which is a division of Ser. No. 567,995, Apr. 14, 1975, Pat. No. 4,010,387. This application Aug. 18, 1977, Ser. No. 825,719
Claims priority, application Japan, May 11, 1974, 49/52517
Int. Cl.² H03K *17/60*
U.S. Cl. 307—254 **2 Claims**



1. A turn-off method for a power transistor switch, the

power transistor switch including a first transistor having an emitter, a collector and a base for ON-OFF switching, said first transistor being connected in series in a path connecting a power source and a load, a second transistor having a collector and an emitter which are connected between the collector-base of said first transistor, and a diode connected in reverse parallel between the base-emitter of said second transistor, the turn-off method comprising the steps of:

applying a first base reverse bias between the base of said second transistor and the emitter of said first transistor, continuously applying a second base reverse bias between the base of said second transistor and the emitter of said first transistor, the absolute quantity of the first base reverse bias being larger than that of the second base reverse bias, and suppressing with a reapplied voltage suppressing means a reapplied voltage which is reapplied between the emitter and the collector of said first transistor during the transition period for switching said first transistor to the OFF state.

4,239,989

METHOD AND APPARATUS FOR DRIVING A TRANSISTOR OPERATED IN SATURATION

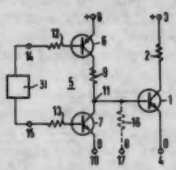
Antonio Brajder, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 29, 1977, Ser. No. 837,805

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1976, 2644507

Int. Cl.³ H03K *17/00*

U.S. Cl. 307—255 **10 Claims**



1. A method for driving at least one transistor which is operated in saturation comprising:

applying a control voltage to the base of said transistor for operating said transistor in a current-conducting state;

applying a cut-off voltage to the base of said transistor for operating said transistor in a cut-off state;

and preceding the application of said cut-off voltage, applying a further voltage for a predetermined desaturation time interval which depends upon the storage time of said transistor to the base of said transistor, said further voltage corresponding to the voltage at the base of said transistor for which the base current of said transistor is approximately zero.

4,239,990

CLOCK VOLTAGE GENERATOR FOR SEMICONDUCTOR MEMORY WITH REDUCED POWER DISSIPATION

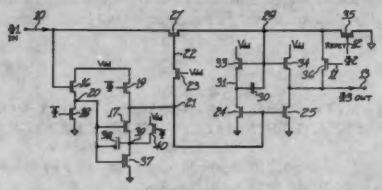
Ngai H. Hong, Galveston; Edmund A. Reese, Sugar Land, and Donald J. Redwine, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 7, 1978, Ser. No. 940,221

Int. Cl.³ H03K *5/135, 17/16, 17/284*

U.S. Cl. 307—262 **6 Claims**

1. A clock generator circuit comprising: an input terminal for receiving a reference clock voltage; a delay circuit connected to the input terminal and producing a delayed intermediate voltage at an output; a driver circuit having an input connected to receive said output and producing a high level delayed clock voltage at an output terminal; the improvement wherein the driver circuit includes in addition a pair of controlled switching devices each having a current path and a control element, the current path of one of the pair of switching devices being connected between said output terminal and a high voltage node, the current path of the other of the pair of switching devices being connected between said high voltage



node and a reference potential, the control elements of the pair of switching devices being connected together and to a reset clock voltage occurring after said delayed intermediate voltage, whereby said output terminal and said high voltage node are both discharged for reset without establishing a direct current path to reference potential.

4,239,991

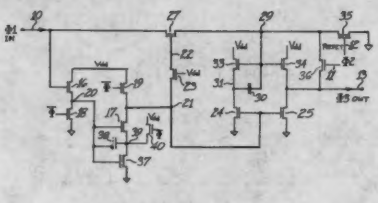
CLOCK VOLTAGE GENERATOR FOR SEMICONDUCTOR MEMORY

Ngai H. Hong, Galveston, and Edmund A. Reese, Sugar Land, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 7, 1978, Ser. No. 940,222

Int. Cl.³ H03K *5/135, 17/16, 17/284*

U.S. Cl. 307—262 **9 Claims**



1. A clock generator circuit comprising: an input for receiving a reference clock voltage; a delay circuit connected to the input and producing a delayed voltage at an output; a driver circuit connected to receive said output and producing a high level delayed clock voltage; the improvement wherein the delay circuit includes a pair of controlled switching devices each having a current path and a control element, the current paths of the pair of switching devices being connected in series between said output and a reference potential, the control elements of the pair of switching devices being connected together and coupled to the input, means for separately precharging said output and a node between the current paths of the pair of switching devices prior to an operating cycle, the switching device having its current path connected between said node and reference potential having a higher threshold than the other of said pair of switching devices.

4,239,992

FREQUENCY TRACKING ADJUSTABLE DUTY CYCLE RATIO PULSE GENERATOR

Derrick O. Perkins, Raleigh, N.C., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Sep. 14, 1978, Ser. No. 942,311

Int. Cl.³ H03K *3/017, 5/04*

U.S. Cl. 307—265 **4 Claims**

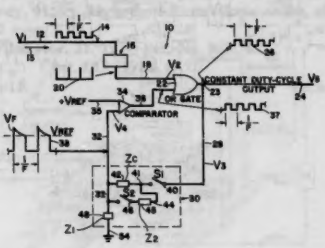
1. Apparatus for creating a train of square pulses of adjust-

able period and duty cycle ratio, responsive to a train of trigger pulses of selected period, comprising:

(a) a source of trigger pulses of selected period;

(b) at least a two input OR gate means adapted to receive said trigger pulses at a first input, and to output a "high" voltage for the duration of said trigger pulses;

(c) feedback means from the output of said OR gate means, through a first switch means and a capacitive impedance, to a second input of said OR gate means, said second input



also connected to ground through a first resistor R1 and providing a feedback voltage;

(d) shunt means comprising a second switch means and a second resistor in series across said capacitive impedance;

whereby so long as said feedback voltage is greater than a selected voltage, the output voltage of said OR gate means will be held high; and when said feedback voltage is less than said selected voltage, said output of said OR gate means will be low, and said first switch means will open and said second switch means will close.

4,239,993

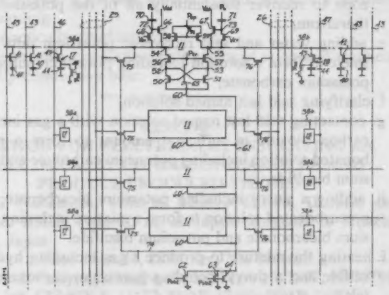
HIGH PERFORMANCE DYNAMIC SENSE AMPLIFIER WITH ACTIVE LOADS

Joseph C. McAlexander, III, Sugar Land; Lionel S. White, Jr., and G. R. Mohan Rao, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 22, 1978, Ser. No. 944,822

Int. Cl.³ H03K *5/24, 3/356;* **G11C** *7/00*

U.S. Cl. 307—355 **10 Claims**



1. A sense amplifier for a semiconductor memory device of the type having an array of rows and columns of memory cells with each column split into two column line halves and sense amplifiers connected to pairs of sense nodes at the ends of each pair of column line havles, comprising:

a pair of cross-coupled driver transistors, a pair of coupling transistors, at least one grounding transistor and a pair of pull-up transistors, each of the transistors having a current path and a control electrode,

means connecting the current path of each of the coupling transistors in series with the current path of a separate one of the driver transistors between one of the sense nodes and a grounding node and connecting the current path of said at least one grounding transistor between the grounding node and reference potential,

the current paths of the pull-up transistors being connected separately between the sense nodes and a supply of a given voltage level,

means for precharging the sense nodes to said voltage level prior to an active operating cycle,

means for addressing a selected row of the memory cells in the array at a given time in the beginning of said operating cycle at a voltage of said voltage level,

means for applying a clock voltage to turn on said at least one grounding transistor at a first time subsequent to the said given time in the beginning of an active operating cycle,

coupling means separately connecting the control electrodes of the pull-up transistors to the sense nodes, the coupling means being conductive only for a given voltage differential during the active operating cycle,

means to boost the voltage on the control electrode of one of the pull-up transistors to higher than said voltage level at a time in the active operating cycle just following the second time,

means to maintain the voltage on the control electrodes of the coupling transistors at higher than said voltage level prior to the beginning of active operating cycle and shifting the level of said voltage level during the active operating cycle,

and means for addressing said selected row of the memory cells at a voltage higher than said voltage level at a time during said active cycle after said first time.

4,239,994

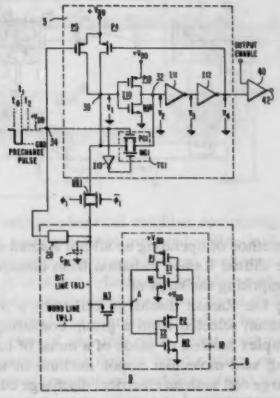
ASYMMETRICALLY PRECHARGED SENSE AMPLIFIER

Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,747

Int. Cl.³ H03K *5/153, 3/356;* **G11C** *7/06*

U.S. Cl. 307—359 **15 Claims**



1. A sense amplifier comprising:

an inverter having a signal input terminal, a signal output terminal, and first and second power terminals for receiving an operating potential therebetween and exhibiting a transition point between first and second logic conditions at its output signal terminal responsive to a particular voltage being applied to its input signal terminal;

means for supplying recurring precharge pulses;

selectively enabled feedback means responsive to each pre-

charge pulse for completing a feedback connection from the output signal terminal of said inverter to its input signal terminal only for the duration of each precharge pulse; said feedback means including a feedback transistor having a conduction path and a control electrode and wherein the conduction path of said feedback transistor is connected between the input and the output of said inverter;

selectively enabled bias means responsive to each precharge pulse applying an offset current during each precharge pulse to the signal input terminal of said inverter of such polarity that the input signal terminal of said inverter adjusts to a value which is offset from said particular voltage, for predisposing the signal at the output signal terminal of said inverter to exhibit said first logic condition at the conclusion of each precharge pulse, said selectively enabled biasing means including a biasing transistor having its conduction path connected between said one of said first and second power terminals and said input of said inverter; and wherein said selectively enabled feedback and biasing means include means for turning on said feedback and biasing transistors concurrently, for the duration of each precharge pulse, and for turning them off concurrently during intervals between succeeding precharge pulses; and

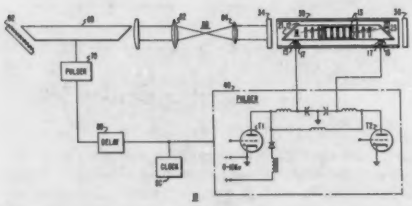
means for selectively applying signals to be sensed to the input signal terminal of said inverter, at selected times, each of which times follows the inception of a precharge pulse.

4,239,995

METAL VAPOR RAMAN FREQUENCY SHIFTER

Donald W. Feldman; Leiland A. Weaver, both of Pittsburgh, and Chi-Sheng Liu, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1979, Ser. No. 15,845
Int. Cl.[2] H03F 7/00
U.S. Cl. 307—426 **17 Claims**



1. A method of operating an all-hot Raman discharge cell to produce shifted Raman radiation from dissociated metal species, comprising the steps of:

filling the Raman discharge cell with a molecular vapor medium selected from a group consisting of the halide, complex halides, or oxide of a metal of interest;

pulsing said molecular vapor medium in said Raman discharge cell with an electrical discharge current to dissociate said molecular vapor medium into metal atoms, and halogens or oxygen atoms, for a predetermined afterglow period, after which period recombination occurs producing the original species of said molecular vapor medium; and

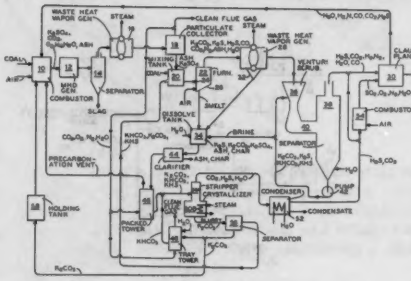
pumping said metal atoms during said afterglow period with a laser pulse generated external to said Raman discharge cell to develop Raman interaction with the dissociated metal atoms and produce a shifted Raman radiation discharge output from said Raman discharge cell.

4,239,996

POTASSIUM CARBONATE RECOVERY

Rohinton K. Bhada, Homeworth; Howard B. Lange, Jr., and Stephen S. Strom, both of Alliance, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed May 29, 1975, Ser. No. 582,066
Int. Cl.[2] H02K 45/00; C01B 17/02; C01D 7/00
U.S. Cl. 310—11 **3 Claims**



1. In the production of electricity in an MHD generator including firing a sulfur-containing fuel in the presence of air and potassium carbonate to produce a high temperature seeded gas, passing the seeded gas through the generator to produce electricity and wherein the potassium carbonate seed reacts with the sulfur to form potassium sulfate, cooling the generator discharge gas through indirect heat exchange, recovering the potassium sulfate from the cooled gas, and converting the potassium sulfate to potassium carbonate crystals and a saturated solution including potassium salts, the improvement comprising the steps of:

a. mixing coal and the saturated solution including potassium salts with said potassium sulfate,

b. firing said mixture in the presence of 60 to 90 percent of stoichiometric air to produce a molten smelt including potassium sulfide and a gas including potassium salts under reducing conditions,

c. cooling the potassium salts-containing gas through indirect heat exchange,

d. passing said last named gas through a liquid spray contact zone to recover substantially all of the potassium salts therefrom,

e. adding water and said recovered potassium salts to the smelt to form a solution including potassium sulfide and potassium carbonate,

f. clarifying said last named solution,

g. contacting said last named solution with a gas including carbon dioxide in sufficient amount to form a precarbonated solution including potassium carbonate and potassium bisulfide,

h. adding a slurry including potassium bicarbonate to the precarbonated solution to form a mixture including potassium bicarbonate and potassium bisulfide,

i. heating the mixture to produce a gas including hydrogen sulfide and a slurry including potassium carbonate crystals,

j. firing at least some of said hydrogen sulfide-containing gas in the presence of air to produce a gas including sulfur dioxide,

k. mixing the remainder of said hydrogen sulfide-containing gas with the gas discharged from said spray contact zone,

l. reacting the gas mixture with said sulfur dioxide to form sulfur,

m. recovering the potassium carbonate crystals from the last named slurry by separating out said saturated solution including potassium salts,

n. recycling the saturated solution including potassium salts for mixing with the potassium sulfate and coal, and

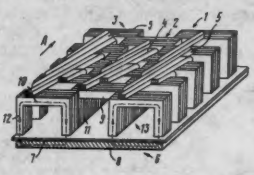
o. recycling the potassium carbonate crystals for use as seeding material for said MHD generator.

4,239,997

LINEAR INDUCTION MOTOR

Alexandr D. Popov, pereulok Rynochny, 44; Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu; Vladimir A. Trofimov, selo Balakleya, pereulok Tikhy, 8, Cherkasskaya oblast; Vasily L. Bocharov, Novocherkassk, pereulok Knizhny, 5, and Jury V. Kuprianov, Novocherkassk, ulitsa Svobody, 11, kv. 11, both of Rostovskaya oblast, all of U.S.S.R.

Filed Nov. 21, 1978, Ser. No. 962,783
Int. Cl.³ H02K *41/07*
U.S. Cl. 310—13 **3 Claims**



1. A linear induction motor comprising an inductor including:

one row of first U-shaped transversely laminated cores, each first core having legs and a connecting yoke;

a first distributed polyphase winding enveloping said row of first U-shaped transversely laminated cores;

at least one but not more than two rows of second U-shaped transversely laminated cores, each second core having legs and a connecting yoke, one leg of each said second cores being arranged between respective legs of two of said first U-shaped transversely laminated cores;

a second distributed polyphase winding enveloping each row of the second U-shaped transversely laminated cores;

two toothless active zones defined by alternating and adjoining legs of said first and second U-shaped transversely laminated cores;

a secondary element interacting through said toothless active zones with said inductor; said secondary element including

a magnetically conductive base and

an electrically conductive part arranged upon said magnetically conductive base.

4,239,998

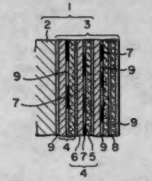
METHOD FOR ELECTRICALLY INSULATING AN ELECTRICALLY CONDUCTING ARTICLE AND PRODUCT PRODUCED THEREBY

Takeshi Hakamada, Hitachi; Hideyo Hirata, Ibaraki, and Toshio Katoh, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 14, 1978, Ser. No. 886,422
Claims priority, application Japan, Mar. 19, 1977, 52-30750
Int. Cl.² H02K *15/12*; H01F *27/30*; H01B *7/00*
U.S. Cl. 310—45 **21 Claims**

1. A method for electrically insulating an electrically conducting article which conprises winding an insulating tape containing a first resin around an electrically conducting article, impregnating the wound insulating tape with a second resin, and curing the second resin, thereby forming an insulating layer around the electrically conducting article, characterized by the first resin being a silicone resin, by the second resin being a resin having a larger force of adhesion between the windings of the tape, after curing, than said first resin, after curing, and by a ratio of the second resin b to the first resin a being 0.5:1 to 5:1 by weight.

7. An electrically insulated, electrically conducting article comprising an electrically conducting article and an insulating



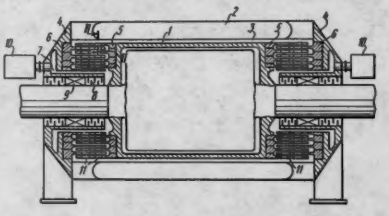
layer comprising an insulating tape wound around the electrically conducting article, produced by the method of claim 1.

4,239,999

SUPER-CONDUCTIVE ELECTRICAL MACHINE HAVING AN IMPROVED SYSTEM FOR MAINTAINING VACUUM IN THE STATOR/ROTOR SPACE

Alexandr A. Vinokurov, ulitsa Polzunova, 31, kv. 314; Gennady S. Gorbunov, ulitsa Polzunova, 35, kv. 42; Jury S. Popov, ulitsa Barlernaya, 16, kv. 14, all of Novosibirsk; Jury V. Skachkov, Nevsky prospekt, 125, kv. 13, Leningrad; Iosif F. Filippov, ulitsa Pulkovskogo, 17, kv. 39, Leningrad, and Gary M. Khutoretsky, ulitsa Altaiskaya, 20, kv. 5, Leningrad, all of U.S.S.R.

Filed Nov. 28, 1977, Ser. No. 855,314
Claims priority, application U.S.S.R., Nov. 30, 1976, 2421858
Int. Cl.² H02K *9/00*
U.S. Cl. 310—52 **1 Claim**



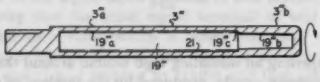
1. A cryogen-cooled electrical machine comprising: a hollow stator and a rotor rotatably mounted within said hollow stator with an annular gap therebetween; each end of said machine having at least two cylindrical shells disposed concentrically with a clearance therebetween, one of said shells being movable and supported in a cantilevered fashion by said rotor on an end face thereof and the other being stationary and supported in a cantilevered fashion by the stator on an end faced thereof thereof opposite said end face of said rotor; said shells having ports serving to achieve and maintain vacuum in said gap between said hollow stator and said rotor, said ports in said rotor-supported shells having axes which form an acute angle α with tangent lines drawn to said shell periphery from the points where said axes intersect the envelope of said shell in the direction of rotation of said rotor, and said ports in said stator-supported shells having axes which form an angle $\beta = 180° - \alpha$ with tangent lines drawn to said shell periphery from the points where said axes intersect the envelope of said shell.

4,240,000

ROTARY ELECTRIC MACHINE WITH A HEAT PIPE FOR COOLING

Keiichi Harano, Sagamihara, and Shigeaki Oyama, Hachioji, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,630
Claims priority, application Japan, Nov. 17, 1977, 52-137266
Int. Cl.[3] H02K 9/00
U.S. Cl. 310—54 2 Claims



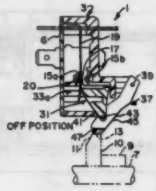
1. A rotary electric motor having a heat pipe therein for cooling the motor, said heat pipe having a first portion positioned within a heating zone and a second portion positioned within a cooling zone, said heat pipe comprising a rotary shaft having an axial hole formed therein, said axial hole having a first diameter in said heating zone and a second diameter in said cooling zone, wherein said second diameter is less than said first diameter, at least one step means formed in said axial hole between said first portion and said second portion thereof, said step means preventing a layer of working fluid formed on the wall of the axial hole in said first portion from flowing into said second portion, wherein the height of said step means is at least $\alpha D_1/4$ where α is the ratio of volume of the working fluid to the volume of the axial hole in said first portion and D_1 is the diameter of the hole in said first portion.

4,240,001

MOTOR STARTING SWITCH

Eugene F. Hildebrandt, Ferguson; Thomas V. Ottersbach, Normandy, and Wayne J. DeVries, St. Louis, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 31, 1978, Ser. No. 938,455
Int. Cl.[3] H02K 11/00
U.S. Cl. 310—68 E 14 Claims



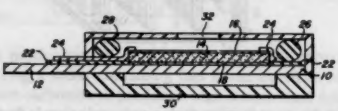
1. A motor starting switch and an electric motor, the latter having a shaft rotatable about its longitudinal axis and a centrifugal actuator mounted on said shaft for rotation therewith, said centrifugal actuator having an actuator member movable axially with respect to said shaft between a run position and an off position, said actuator member being movable from its off position to its run position upon said shaft rotating at a predetermined speed and being movable from its run position toward its off position upon slowing of the shaft, said actuator member having an actuating surface generally facing toward its off position and another surface contiguous to said actuating surface, said switch comprising a housing rigidly mounted with respect to said motor, at least one set of contacts within said housing including one contact fixed with respect to said housing and another contact movable with respect thereto between a closed position in which said contacts are in electrical contact with one another and an open position in which electrical contact therebetween is broken, a slider member movable within said housing along a line of action generally parallel to said longitudinal axis of said shaft, a lever pivotally secured to said housing having an inclined surface engageable by said actuating surface of said actuator member as the latter moves from its run toward its off position thereby to effect sliding movement of said slider member in one direction in said housing for moving said movable contact from one of its said positions to another of its said positions and said lever further having a bottom surface contiguous to said inclined surface engageable by said other surface of said actuator member as the latter moves further toward its off position thereby to hold said movable contact in its said other position.

4,240,002

PIEZOELECTRIC TRANSDUCER ARRANGEMENT WITH INTEGRAL TERMINALS AND HOUSING

Kenneth F. Tosi, Plantation, and John M. McKee, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1979, Ser. No. 26,624
Int. Cl.[3] H01L 41/08
U.S. Cl. 310—324 4 Claims



1. A transducer device as for a miniature radio apparatus and comprising:

a planar metal diaphragm having at least one peripherally projecting portion;

a planar electromechanical element having a surface area less than the surface area of said diaphragm and having electrodes formed on the opposing faces of said element;

non-insulating mounting means for affixing a first face of the electromechanical element centrally of the diaphragm;

a thin insulating layer formed on the diaphragm and adjacent at least a portion of the electromechanical element and extending onto one projecting portion of the diaphragm;

conductive means formed on at least a portion of a second face of the electromechanical element and on a portion of the insulating layer including the insulated area on the projecting portion of the diaphragm but not in electrical contact with the diaphragm, whereby the exposed projecting portion of the diaphragm and the conductive means formed on the projecting portion provide terminals for the device; and

housing means for peripherally holding and retaining the diaphragm, having a sound aperture adjacent the second face of the electromechanical element, and having a second aperture for allowing the peripherally projecting portion of the diaphragm, including the extended portion of the insulating layer and the conductive means, to extend beyond the housing means.

4,240,003

APPARATUS AND METHOD FOR SUPPRESSING MASS/SPRING MODE IN ACOUSTIC IMAGING TRANSDUCERS

John D. Larson, III, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

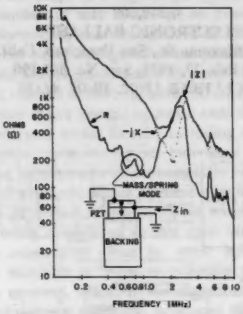
Filed Mar. 12, 1979, Ser. No. 20,007
Int. Cl.[3] H01L 41/08
U.S. Cl. 310—326 3 Claims

1. An acoustic imaging transducer comprising:

an acoustic absorbing backing; and

a plurality of piezoelectric elements affixed to a surface of

the backing for radiating and receiving acoustic waves, each of said elements including suppression means for



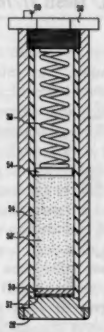
suppressing spurious acoustic waves produced by mass/-spring mode vibration.

4,240,004

ULTRASONIC TRANSDUCER WITH CHEMICAL-SETTING INORGANIC CEMENT BACKING FOR OPERATION AT HIGH TEMPERATURES

Robert L. Coleman, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 20, 1978, Ser. No. 944,040
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—327 5 Claims



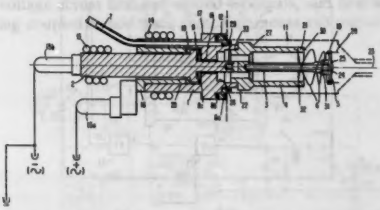
1. A transducer for high temperature operation comprising:
(a) an active transducer element having front and rear active surfaces;
(b) a backing member abutting said rear surface;
(c) said backing member comprising a chemical-setting inorganic cement powder blended with a powdered metal and to which water has been added to bring about a chemical reaction resulting in the solidification of the blend, the blend being suitably dried and thereafter baked.

4,240,005

APPARATUS FOR THE GENERATION OF PRIMARY ELECTRONS FROM A CATHODE

Roderich Keller, Darmstadt, Fed. Rep. of Germany, assignor to GSI Gesellschaft fuer Schwerionenforschung m.b.H., Darmstadt, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 60,764
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842506
Int. Cl.[3] H01J *1/15*
U.S. Cl. 313—231 8 Claims



1. Apparatus for generating primary electrons from a cathode for maintaining forced gas discharges, said apparatus comprising a body; concentric energy supply conductors mounted on said body, the first of said conductors being a hollow cylinder and the second conductor extending centrally through and beyond said cylinder and carrying said cathode at its free end, said cathode being in the form of a plate having an electron discharge face; and at least one heating filament electrically connected between said cathode and said cylinder.

4,240,006

PHOTOCONDUCTIVE LAYER AND TARGET STRUCTURE FOR IMAGE PICKUP TUBE

Hiromichi Kurokawa, Yokohama; Yasuo Nakamura, Atsugi; Masayoshi Gando, Kanagawa; Haruhiko Okada, Ebina; Masaru Yamazaki, Sagamihara, and Hideo Yamanaka, Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

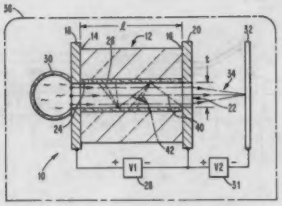
Filed Dec. 14, 1978, Ser. No. 969,646
Claims priority, application Japan, Dec. 26, 1977, 52-156916
Int. Cl.[3] H01J *29/45, 31/38*
U.S. Cl. 313—386 7 Claims

1. An image pick-up tube having a target structure comprising a transparent substrate, a transparent conductive layer on said substrate, a photo-conductive layer comprising selenium over said conductive layer, and a semi-insulating oxide layer intervened between said conductive layer and said photoconductive layer, characterized in that said semi-insulating oxide layer comprises at least one IIb metal in the periodic table selected from the group consisting of zinc and cadmium, and at least one IVa metal in the periodic table selected from the group consisting of tin and germanium, wherein said photoconductive layer further comprises tellurium Te and arsenic As, and wherein said oxide layer is made of $Cd_{2-x}Zn_xSnO_4$ ($1 \leqq x \leqq 2$).

4,240,007
MICROCHANNEL ION GUN

Russell W. Dreyfus, Mt. Kisco; Nicholas A. Penebre, Chappaqua, and Richard A. McCorkle, South Salem, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,496
Int. Cl.[3] H01J 27/02, 43/02
U.S. Cl. 315—111.8 13 Claims

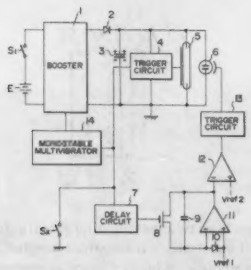


1. An ion gun for locally exposing a target which comprises:
a high resistance body having a first and a second end which are specially separated;
a first electrode attached to said first end;
a second electrode attached to said second end;
a capillary passage having a surface which passes through said first electrode, said high resistance body, and said second electrode,
said surface having a composition such that it is partially conducting and has a secondary electron emission coefficient greater than unity;
means for maintaining said first electrode at an electric potential above said second electrode; and
a source of ionizable material adjacent to said first electrode and communicating with said capillary passage.

4,240,008
AUTOMATIC ELECTRONIC FLASH LIGHT DEVICE

Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 9, 1979, Ser. No. 10,690
Int. Cl.[3] H05B 41/32
U.S. Cl. 315—151 3 Claims

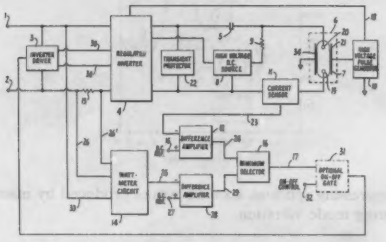


1. An automatic electronic flash light device having a flash light tube, and means for triggering said tube, and in which an electric discharge of the flash light tube is terminated when the integrated amount of the light reflected by an object to be photographed and illuminated by the flash light from the flash light tube has reached a predetermined value comprising: an integrated circuit which integrates the amount of light reflected by the object, and a delay circuit, said integrating circuit being started by a signal applied thereto by said delay circuit, said signal being delayed so as to be generated after said triggering means have triggered said flash light tube.

4,240,009
ELECTRONIC BALLAST

Jon D. Paul, 145 Bluxome St., San Francisco, Calif. 94107

Filed Feb. 27, 1978, Ser. No. 881,190
Int. Cl.[3] H05B 37/02, 39/04, 41/36
U.S. Cl. 315—224 17 Claims

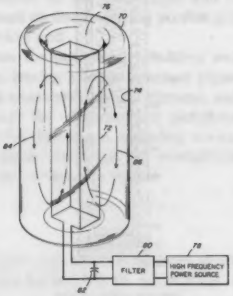


1. An electronic ballast for starting and operating at least one gaseous discharge lamp including:
(a) means providing a source of d-c electrical input power;
(b) a regulated inverter connected to the source for producing a-c output power;
(c) an inverter driver controlling and driving the regulated inverter; and
(d) control circuit means for the inverter driver sensing the input d-c power and output a-c current to provide constant current a-c power from the inverter during lamp warmup and constant wattage a-c power thereafter.

4,240,010
ELECTRODELESS FLUORESCENT LIGHT SOURCE HAVING REDUCED FAR FIELD ELECTROMAGNETIC RADIATION LEVELS

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 18, 1979, Ser. No. 49,773
Int. Cl.[3] H05B 41/16, 41/24
U.S. Cl. 315—248 14 Claims



1. An electromagnetic discharge apparatus comprising:
an electrodeless lamp having an envelope made of a light transmitting substance, said envelope having on its inner surface a phosphor coating which emits visible light upon absorption of ultraviolet radiation, said envelope enclosing a fill material which emits ultraviolet radiation during electromagnetic discharge; and
means for excitation of the discharge in said electrodeless

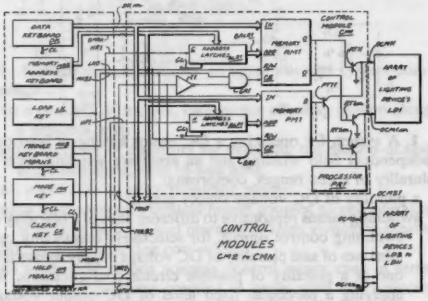
lamp by high frequency power, said excitation means including induction coil means located in sufficiently close proximity to said lamp to cause discharge, said induction coil means including a conductor configured to generally outline the shape of a regular polygonal prism having an even number of side faces and an even number of side edges formed by the intersections of said side faces, said conductor being configured to run parallel to and coincide with said side edges in such a direction that, at any instant of time, current in the conductor on adjacent side edges of said prism flows toward opposite ends of said prism, said induction coil means thereby including a plurality of current loops, each having an individual magnetic dipole moment which emits electromagnetic radiation, and having a net magnetic dipole moment which is the vector sum of said individual magnetic dipole moments, said current loops being configured so that each individual magnetic dipole moment is offset by other individual magnetic dipole moments in order to minimize said net magnetic dipole moment, whereby the magnitude of the far field electromagnetic radiation, produced directly by said induction coil means, is minimized.

4,240,011

KEYBOARD OPERATED CONTROLLER

Frank Dinges, 176 W. 87th St., New York, N.Y. 10024, and Tartaglio, Robert L., c/o Design Circuit Inc., 141 5th Ave., New York, N.Y. 10010

Filed Jul. 17, 1978, Ser. No. 925,039
Int. Cl.[3] H05B *37/02*
U.S. Cl. 315—292 **11 Claims**



1. Apparatus for controlling the operation of a plurality of electrically actuatable devices comprising a memory means including a plurality of addressed multiposition registers, each position of a register corresponding to one of the electrically actuatable devices and being adapted for storing an indicium to establish a desired state of the device, there being a plurality of positions corresponding to the electrically actuatable devices, addressing means for receiving an address for selecting respective of said addressed multiposition registers to limit the controls of the positions for controlling the electrically actuatable devices, and address input means for generating and transmitting addresses to said addressing means, said address input means comprising a finger operated keyboard including capacitance-type touch keys to provide rapid selection of addresses for use in discotheque type lighting.

4,240,012

REGULATED DEFLECTION CIRCUIT

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 98,922
Int. Cl.[3] H01J *29/70*
U.S. Cl. 315—408 **10 Claims**

1. A regulated deflection circuit, comprising:

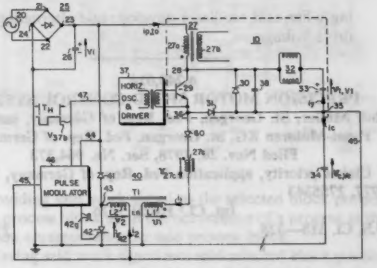
a deflection winding;

a voltage source for developing a first DC voltage;

a trace capacitance coupled to said voltage source for developing a trace voltage;

trace switching means coupled to said deflection winding for applying said trace voltage to said deflection winding to generate a trace deflection current each deflection cycle when said trace switching means is conductive, a retrace pulse voltage being developed across said deflection winding when said trace switching means is cut off during a retrace interval of each deflection cycle;

means including a regulator transformer with first and second windings for establishing a second substantially DC voltage across first and second terminals, said first winding coupled to said trace switching means and one of said



first and second terminals for applying said second DC voltage to said first winding to generate current in said first winding, said trace voltage constrained to assume a voltage representative of the difference in voltage between said first and second DC voltages, said second winding conducting current when the current in said first winding is cut off at the initiation of said retrace interval;

second switching means coupled to said second winding, the conduction of said second switching means controlling the current in said second winding to vary said second voltage; and

control means coupled to said second switching means and responsive to a deflection circuit quantity for altering the conduction of said second switching means to regulate said deflection circuit quantity.

4,240,013

HORIZONTAL DEFLECTION AND POWER SUPPLY CIRCUIT WITH A START-UP ARRANGEMENT

Werner F. Wedam, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,083
Int. Cl.[3] H01J *29/70*
U.S. Cl. 315—411 **10 Claims**

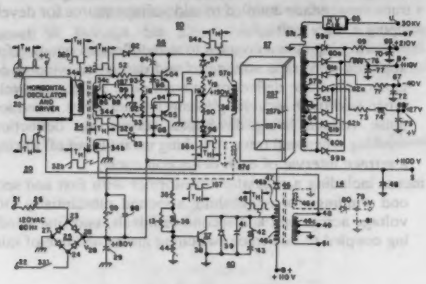
1. A deflection and power supply circuit with a start-up arrangement, comprising:

an oscillator for providing an alternating current drive voltage;

a power supply including output switching means coupled to said oscillator and responsive to said alternating current drive voltage for developing a supply voltage for a deflection circuit;

an energization voltage developed from one of said power supply and said deflection circuit and coupled to said oscillator for energizing said oscillator into oscillation, said energizing voltage being developed after the elapse of a start-up interval; and

means for enabling said output switching means to self-oscillate during said start-up interval and to cease self-oscillating when said oscillator develops said alternating current drive voltage.



4,240,014

PRECISION MOTOR SPEED CONTROL SYSTEM

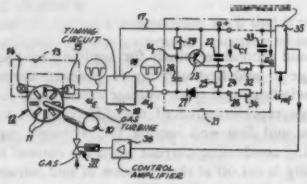
Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,373

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755343

Int. Cl.³ H02P 5/16

U.S. Cl. 318—328 **27 Claims**



1. Speed control system for a motor (**10, 63, 110, 125**) having a controlled energy supply (**37, 97, 120**);

speed signal generating means (**11-15;75-86; 121; 132; 133, 134**) providing a series of speed needle pulses (u_E) having a repetition rate representative of speed of rotation of the motor;

a commanded timing element (**16, 51, 62**) providing a pulse train forming a characteristic representative of a commanded speed and furnishing a sequence of essentially square wave output pulses (u_E) of a controlled

pulse length (T_S) separated by controlled pulse gaps in which, when the motor is operating at essentially the commanded speed, the controlled length of the pulses is just slightly shorter than the recurrence time interval (T_i) of the speed needle pulses and in which the pulse gaps between the pulses have a width such that the needle pulses fall within said pulse gaps;

a storage element (**22**);

charge means (**17, 25, 27**) connected to and charging said storage element (**22**) at a predetermined rate during the difference (ΔT) between said recurrence time interval (T_i) of the needle pulses (u_E) and said pulse length of the essentially square wave output pulses (u_A);

discharge means (**23**) connected to and discharging said storage element after elapse of at least a portion of the time period (T_s) of the pulse (u_A)of the control pulse length;

speed error signal generating means (**35, 94**) generating a control signal, connected to and controlled by the charge on said storage element and having an output controlling said controlled energy supply as function of deviation of actual essentially instantaneous motor speed from commanded motor speed,

and comprising, in accordance with the invention

an override discharge circuit (**55, 61, 68**) connected to and responsive to said speed needle pulses (u_E) and connected to and controlling said commanded timing element (**16, 51, 62**) to reset said timing element to provide a new pulse train and, further, to discharge said storage element (**22**)

to prevent simulation of a low-speed condition if the difference between actual speed and commanded speed is substantial.

4,240,015

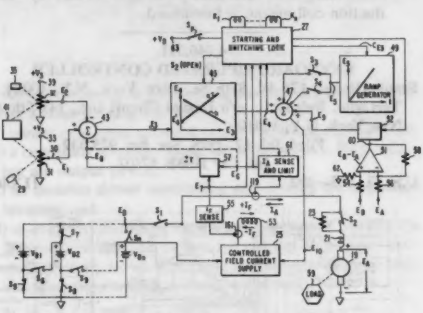
CONTROL SYSTEM AND METHOD FOR OPERATING A DC MOTOR

Kevin E. White, Washington Township, Warren County, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 15, 1977, Ser. No. 824,544

Int. Cl.² H02P 5/40

U.S. Cl. 318—338 **5 Claims**



1. A system for operating a DC motor having at least one independent field winding and an armature winding, over a plurality of speed ranges, comprising:

a plurality of DC voltage supply means;

switching means repsonsive to different ones of a plurality of switching control signals, for selectively connecting certain ones of said plurality of DC voltage supply means into one of a plurality of possible circuit configurations, for applying a particular fixed level of DC output voltage therefrom across said armature winding, for operating said motor over a particular speed range;

adjustable DC current supply means responsive to a current magnitude signal, for selectively supplying a magnitude of current to said field winding directly proportional to the magnitude of said current magnitude signal necessary for obtaining and maintaining a desired speed within a particular speed range;

speed selection means for producing said current magnitude signal; and

controller means responsive to the field current above base speed attaining a predetermined value, for continuously adjusting the amplitude of said current magnitude signal to change the magnitude of the field current towards a value for decreasing the magnitude of the armature current and while so operating, also being responsive to the first occurring one of the field current attaining a predetermined minimum magnitude concurrent with negative armature current, the field current attaining a first predetermined maximum magnitude concurrent with positive armature current, the armature current reducing to substantially zero, for then producing a first switching control signal for operating said switching means to disconnect said DC output voltage from across said armature winding, for next producing a second switching control

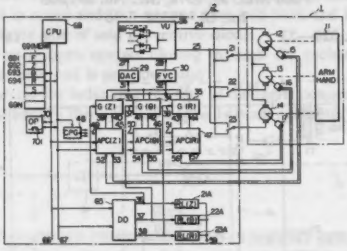
signal for operating said switching means to first connect the plurality of DC voltage supply means into a different configuration producing a different level of DC output voltage, and thereafter a third switching control signal for operating said switching means to connect this new level of voltage across said armature winding, thereby changing the speed range with a substantially reduced magnitude of current being switched by said switching means.

4,240,016

POSITIONING DEVICE FOR AN INDUSTRIAL ROBOT

Hajimu Inaba, and Hideo Miyashita, both of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Feb. 1, 1979, Ser. No. 8,518
Claims priority, application Japan, Feb. 10, 1978, 53/13628
Int. Cl.³ G05B *11/32*
U.S. Cl. 318—562 **1 Claim**



1. A positioning system for an apparatus said system comprising:

(a) a plurality of motors, each motor effecting motion along a different axis;

(b) a plurality of detectors for detecting the motion of said apparatus along each of said axes;

(c) a plurality of relay switching means;

(d) a single velocity control means coupled to said plurality of motors through said plurality of relay switching means;

(e) a digital to analog converter;

(f) a plurality of axis position control means each in series with a gate means coupled in series with said velocity control means through said digital to analog converter;

(g) a digital output means, the output of said digital output means being connected to said plurality of relay means for actuating said relay means and to the control inputs of said gate means;

(h) memory means coupled to the input of said digital output means; and

(i) a central processing means coupled to said memory means and said digital output means for controlling said memory means and said digital output means.

4,240,017

CONTROL METHOD IN AN INTERMITTENTLY MOVING MECHANISM AND A SHIFT REGISTER FOR CARRYING OUT THE METHOD

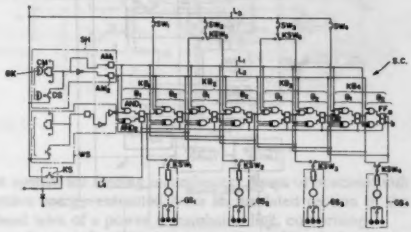
Hiroshi Uekusa, Chiba, Japan, assignor to Yoshino Kogyosho Co., Ltd., Japan

Filed Jul. 21, 1977, Ser. No. 817,684
Int. Cl.² G05B *19/26*
U.S. Cl. 318—600 **7 Claims**

1. A control method for commands for an intermittently moving mechanism for inspecting and machining products while said mechanism is being intermittently moved through a plurality of stations, comprising the steps of:

(a) providing alternately occuring shift signals, one of said shift signals corresponding to the moving period of said intermittent mechanism and the other of said shift signals corresponding to the stopping period of said intermittent mechanism, to a plurality of sequentially connected process blocks respectively corresponding to said plurality of stations, said process blocks having connected first and second block portions to form a plurality of sequentially connected block portions;

(b) selecting said first block portion or said second block portion of said process blocks for reception of a work signal;



(c) providing said work signal to the selected block portion of a process block upon the occurrence of a process at the station corresponding to said process block;

(d) entering said work signal into said selected block portion upon the occurrence of said one shift signal to produce outputs of said selected block portion of an output signal to the next succeeding block portion and of a feedback signal to the next preceeding block portion; and

(e) cancelling any outputs of said next preceeding block portion by said feedback signal upon occurrence of said other shift signal.

4,240,018

Patent Not Issued For This Number

4,240,019

Patent Not Issued For This Number

4,240,020

CONTROL SYSTEM FOR SUPPRESSING TORQUE RIPPLE IN SYNCHRONOUS MOTOR

Toshiaki Okuyama; Yuzuru Kubota; Hiroshi Nagase, all of Hitachi, and Katsunori Suzuki, Takahagi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 30, 1978, Ser. No. 920,699
Claims priority, application Japan, Jul. 4, 1977, 52/79133
Int. Cl.³ H02P *7/28*
U.S. Cl. 318—721 **6 Claims**

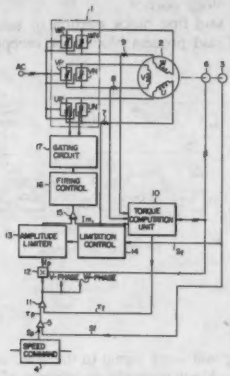
1. A control system for suppressing torque ripple of a synchronous motor, comprising:

(a) the synchronous motor having multi-phase armature windings and a field winding;

(b) a frequency converter for supplying AC current of variable frequencies to said armature windings;

(c) a position detector for producing a sinusoidal waveform signal in dependence on the rotational position of said synchronous motor and having a substantially constant amplitude independent of the rotational speed of said motor;

(d) compensation means for compensating the armature reaction of said synchronous motor;
(e) current detector means for detecting armature current of said synchronous motor;
(f) torque computation circuit for arithmetically determining actual torque value from said sinusoidal waveform position signal and said armature current; and



(g) control means for controlling output current of said frequency converter in response to deviation of said actual torque value from a command torque value for suppressing torque ripple of said synchronous motor even at low motor speeds.

4,240,021

SOLAR CELL BATTERY CHARGING CONTROL SYSTEM

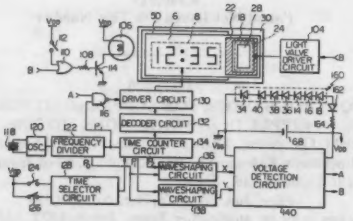
Yoshinobu Kashima, Tanashi, and Makoto Yoshida, Tokorozawa, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 12, 1978, Ser. No. 905,615

Claims priority, application Japan, May 20, 1977, 52-57652; Jul. 29, 1977, 52-90986; Sep. 16, 1977, 52-111370; Dec. 22, 1977, 52-153609

Int. Cl.³ H02J 7/00; H01L 31/00

U.S. Cl. 320—2 **8 Claims**



1. A solar battery charging control system having a storage battery and a plurality of solar cells connected in series with said storage battery to charge said storage battery, comprising:
detection means for detecting a battery charge level and generating an output signal when said battery charge level exceeds a predetermined value;
a driver circuit for generating a drive signal responsive to said output signal; and
heavy load means responsive to said drive signal to discharge said storage battery thereby preventing overcharging of said storage battery, said heavy load means discharging said battery for a predetermined interval of time, the duration of said predetermined interval of time being determined by said output signal from said detection means.

4. A solar cell battery charging control system having a storage battery, and a plurality of solar cells connected in series for charging said storage battery, comprising:
detection means for detecting a battery charge level and generating an output signal when said battery charge level exceeds a predetermined value; and
a liquid crystal cell functioning as a light control valve to control a level of light incident upon at least one of said plurality of solar cells responsive to said output signal.

4,240,022

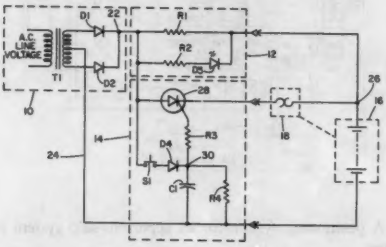
BATTERY CHARGING CIRCUIT FOR PORTABLE POWER TOOL

David C. Kilinskis, Chicago, and Louis J. Vassos, Park Ridge, both of Ill., assignors to Skil Corporation, Chicago, Ill.

Filed Mar. 29, 1978, Ser. No. 891,305

Int. Cl.³ H02J 7/10

U.S. Cl. 320—23 **11 Claims**



1. A circuit for recharging battery cells comprising:
(a) terminals for connecting the circuit to a current source,
(b) a fast charge section in circuit between said terminals and said battery cells for charging said cells at a maximum rate, said fast charge section including:
an SCR including a gate electrode completing a circuit path from the source to said battery cells,
means for enabling said SCR during a portion of each half cycle of said current source including a capacitor connected to said gate electrode and initiating means for charging said capacitor to a voltage sufficient to produce a current exceeding the gate threshold of said SCR,
(c) means for temporarily interrupting the circuit from the current source through said fast charge section when said cells approach full charge, said interrupting means including a normally closed thermostat in thermal relation with said cells, said thermostat opening due to the heat produced by said cells when they approach full charge,
(d) means for disabling said fast charge section upon operation of said interrupting means to prevent further charging at said maximum rate.

4,240,023

DEVICE FOR INDICATING THE RATE OF CHARGE IN AN AC GENERATOR

Takayoshi Masutani, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 29, 1978, Ser. No. 974,437

Claims priority, application Japan, Feb. 20, 1978, 53-18760; Feb. 20, 1978, 53-21054[U]

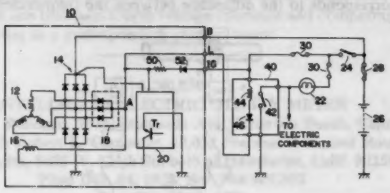
Int. Cl.³ H02J 9/14

U.S. Cl. 322—99 **5 Claims**

1. A device for indicating the rate of charge in an AC generator for a vehicle comprising an exciting diode for feeding electric current to a field coil and a contactless regulator, and

whose output end is connected to a battery mounted on the vehicle for charging, characterized in that:

a relay coil is provided between output end of said exciting diode and one end of an electric power switch, the other end of which is connected to said battery;



a reverse-current preventive diode is connected to said relay coil in series and in a manner that said field coil is on a cathode side of said preventive diode;

a normally open contact closing through the excitation of said relay coil is provided; and

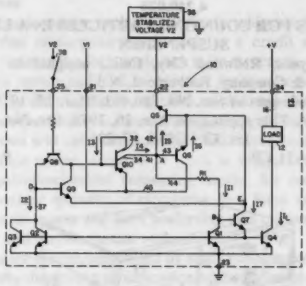
the device for indicating the rate of charge is connected to said battery through said normally open contact.

4,240,024

TEMPERATURE COMPENSATED CURRENT SOURCE

Tom L. Blackburn, San Jose, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 15, 1979, Ser. No. 12,254
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—4 **16 Claims**



1. A temperature compensated current source which is suitable for manufacture in integrated circuit form comprising:

first, second and third DC supply terminals;

a plurality of transistors of the same conductivity type;

a first resistor;

first means electrically connecting one end of said first resistor to said first terminal and through series connected base-emitter junction diodes of a prescribed number of ones of said transistors to said second terminal; and

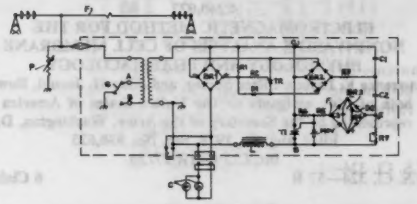
second means electrically connecting the other end of said first resistor through series connected base-emitter junction diodes of the same prescribed number of others of said transistors to said third terminal for establishing a voltage across said first resistor that is substantially constant and independent of temperature variations for setting a reference current in it and one of said other transistors when said terminals are connected to suitable supply voltages.

4,240,025

FEEDING SYSTEM FOR INCANDESCENT LAMPS BY OVERHEAD WIRES OF TRANSMISSION LINES

Raymond Berthiaume, Ste-Julie, Canada, assignor to Hydro-Quebec, Montreal, Canada

Filed Sep. 18, 1978, Ser. No. 942,976
Claims priority, application Canada, Apr. 13, 1978, 301090
Int. Cl.³ H05B *41/392*; H02J *11/00*; G05F *1/44*
U.S. Cl. 323—8 **11 Claims**



1. A system for feeding incandescent lamps of beacons with capacitive energy extracted from an insulated section of the overhead wire of a power transmission line, comprising

means for transforming said energy from the overhead wire into AC current supplying at least one of said incandescent lamps;

a regulation circuit mounted in shunt with said transforming circuit for controlling the flow of said AC current feeding said at least one incandescent lamp, said regulation circuit comprising a switching circuit for regulating said AC current flow and a control circuit operatively connected to said switching circuit to command the switching time thereof; and

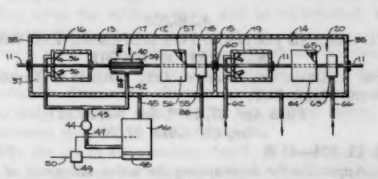
a current detection circuit mounted in series with said at least one incandescent lamp and so-connected with the control circuit as to monitor the switching time of said switching circuit, said detection circuit comprising a switching unit for feeding said incandescent lamp during a time interval determined by said control circuit of said switching circuit, said detection circuit further acting on said control circuit so as to advance the switching time of said switching circuit for diverting to ground the energy extracted from the overhead wire.

4,240,026

DETECTION OF FAULTS IN THE INSULATION OF AN ELECTRICAL CONDUCTOR USING A LIQUID ELECTROLYTE

Peter Murphy, Longueuil; Yvon O. Dionne, Chateauquay; Jerry J. Kral, Montreal, and John Stefaniszyn, Beaconsfield, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 21, 1979, Ser. No. 50,770
Int. Cl.³ G01R *31/2*
U.S. Cl. 324—54 **16 Claims**



1. Apparatus for the detection of faults in the insulation of a conductor having at least one electrically conductive core and an insulating layer on the core, comprising;

a housing;

means in said housing for holding a liquid electrolyte; means

for passing an insulated conductor through said electrolyte;

means for applying a regulated DC supply to said electrolyte; means for grounding the electrically conductive core of a conductor;

means connected to the electrolyte to detect any change in electrical bias between said electrolyte and said core;

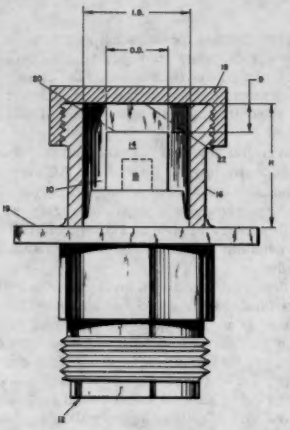
means for producing a signal indicative of a change in said bias when said change is above a predetermined value.

4,240,027

ELECTROMAGNETIC METHOD FOR THE NONINVASIVE ANALYSIS OF CELL MEMBRANE PHYSIOLOGY AND PHARMACOLOGY

Lawrence E. Larsen, Silver Spring, and John H. Jacobi, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 31, 1978, Ser. No. 938,625
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—57 R **6 Claims**



1. A method for noninvasive analysis of cell membrane physiology and pharmacology by measurement of the reflection coefficient with electromagnetic energy in the high frequency band applied to cellular suspensions in order to evaluate the selective permeability thereof comprising the steps of subjecting a sample of cell suspension to two port automatic network analysis step-wise over a plurality of preselected frequencies in the high frequency band and measuring the reflection coefficient thereof for each of the plurality of preselected frequencies and calculating the complex permittivity at each of the plurality of preselected frequencies to determine contrast between the introcellular and extracellular spaces based upon the dispersion of complex permittivity.

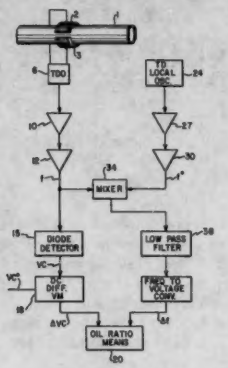
4,240,028

MEANS AND METHOD FOR DETERMINING WATER SATURATION OF OIL

Lorne A. Davis, Jr., Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,937
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **8 Claims**

1. Apparatus for determining the water saturation of a fluid flowing in a pipe or of a core sample, comprising sensing means spatially arranged with the fluid or core sample for providing a signal whose amplitude and frequency corresponds to the water saturation, difference means connected to the sensing means for providing a difference signal corresponding to the voltage difference between the signal from the sensing means and a reference level established for the signal from the sensing means for substantial 100% water saturation, local oscillator means for providing a local signal whose frequency corresponds to a substantially 100% water saturation condition, mixer means connected to the sensing means and to the local oscillator means for providing a signal having a frequency that corresponds to the difference between the frequencies of the



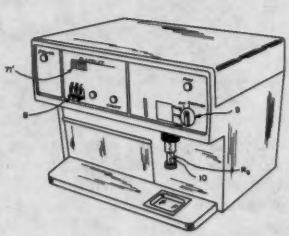
signals from the sensing means and the local oscillator means, converter means connected to the mixer means for providing a DC voltage whose amplitude corresponds to the frequency of the mixer means signal, and oil ratio means connected to the difference means and to the converter means for providing an output corresponding to the water saturation of the fluid or core sample in accordance with the signals from the difference means and the converter means.

4,240,029

APPARATUS FOR COUNTING PARTICLES IN A LIQUID SUSPENSION

John L. Haynes, Redwood City, Calif., assignor to Becton Dickinson & Company, Rutherford, N.J.

Continuation-in-part of Ser. No. 780,402, Mar. 23, 1977, Pat. No. 4,165,484. This application Apr. 20, 1979, Ser. No. 31,770
Int. Cl.³ G01R *27/22*
U.S. Cl. 324—71 CP **9 Claims**



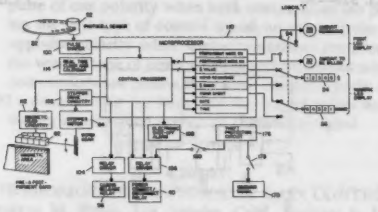
1. Apparatus for counting platelets and red blood cells in a sample of blood comprising: means for separately counting platelets and red blood cells of said blood sample including means for sensing their relative sizes by the magnitude of electrical pulses from an aperture type transducer having an assumed noise level, said platelets having normal lower and upper limits of size distribution and said red blood cells having a normal lower limit of size distribution; first voltage reference means set at approximately the upper limit of the assumed noise level of said transducer; second voltage reference means set at approximately the lower limit of normal platelet pulses; third voltage reference means set above the upper limit of

normal platelet pulses; fourth voltage reference means set below the lower limit of normal red blood cell pulses; means for counting electrical pulses greater than said first voltage reference but less than said second voltage reference and comparing such count to a corresponding platelet count; means for counting electrical pulses greater than said third voltage reference but less than said fourth voltage reference and comparing such count to a corresponding platelet count.

4,240,030
INTELLIGENT ELECTRIC UTILITY METER

Jcss R. Bateman, 1516 Esplanade Ave., Redondo Beach, Calif. 90277; Robert L. Carpenter, 12,032 Freeman Ave., and Ross K. Smith, 5435 W. 124th St., both of Hawthorne, Calif. 90250

Filed Dec. 14, 1978, Ser. No. 969,303
Int. Cl.³ G01R *1/00*
U.S. Cl. 324—110 15 Claims



1. An improved electric utility meter unit of the type having a meter housing, means for connecting the unit to external power lines, means for connecting the power from the lines to the structure to which the meter unit is associated, and electromechanical measuring means for determining the quantity of electricity passing into the structure, wherein the improvement comprises:

receptacle means, including a slot in said unit, for receiving a thin rectangular card, such as a credit card, having encodable medium included in its structure;

circuit means included in said unit for monitoring and regulating the electricity supplied to said structure;

transducer means for interchanging digital information between said card medium and said circuit means;

interface means, adapted to work in conjunction with said electromechanical measuring means, for converting the resulting quantity of electricity to a form usable by said circuit means and for transferring said converted quantity to said circuit means; and

indicator means, controlled by said circuit means, for numerically displaying an indication of the quantity of electricity passing to said structure in a time interval determined upon said insertion of said card.

4,240,031
DEVICE FOR MEASURING THE POTENTIAL OF AN ALTERNATING CURRENT CARRYING INNER CONDUCTOR OF AN ENCASED HIGH-VOLTAGE SWITCHING MECHANISM

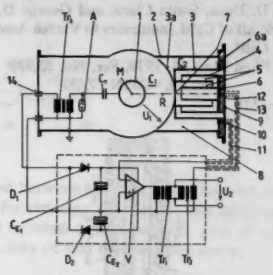
Andreas Siegenthaler, Monchaltorf, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Feb. 27, 1979, Ser. No. 15,646
Claims priority, application Switzerland, Mar. 23, 1978, 3206/78
Int. Cl.³ G01R *15/04*
U.S. Cl. 324—126 9 Claims

1. A device for measuring the electrical potential of an inner conductor of a high-voltage switching mechanism having a grounded metal casing which is filled with an insulating material, comprising:

a first capacitor located within the insulator filled casing including a high voltage electrode comprised of said inner conductor and a test electrode;

an amplifier having an input terminal connected to said test electrode; and

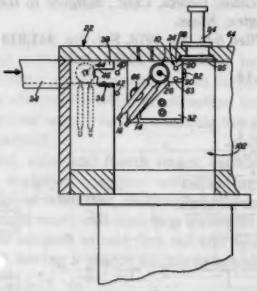


a second capacitor located within said insulator filled casing which is connected to said first capacitor and coupled to said amplifier in a feedback path.

4,240,032
TRANSPORTING AND ORIENTING AN ARTICLE USING A MOVABLE CARRIER INSERTED INTO AN INDENTATION IN THE ARTICLE

Everett C. Johnson, Sinking Springs, and Arthur G. Naylor, Wyomissing, both of Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 847,279
Int. Cl.³ G01R *31/02, 31/22;* B65G *47/24*
U.S. Cl. 324—158 F 9 Claims



1. A method of transporting, orienting and testing an electronic component having a body portion, at least one lead extending from the body portion, and an indentation, said method comprising:

placing a pin into the indentation of the electronic component when at least one lead is extending approximately vertically downward, thereby holding the component movably against a substantially flat surface having an abutment mounted to said surface; and

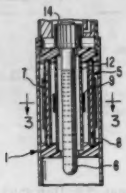
moving the pin to a test station thereby sliding the component along the surface to contact the vertically downward lead of the component with the abutment to pivot the component about the pin to position the lead which was vertically downward into a substantially horizontal orientation at the test station; and

engaging the lead with testing contacts at the test station to perform a test on the component.

4,240,033
METHOD AND APPARATUS FOR PREVENTING IONIZATION INDUCED NOISE IN DECOUPLER EXPERIMENTS

Marvin H. Anderson, Mountain View; George Chmyz, Palo Alto; Carl D. Daus, Santa Clara, and George D. Kneip, Jr., Menlo Park, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 26, 1979, Ser. No. 23,939
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—321 **5 Claims**

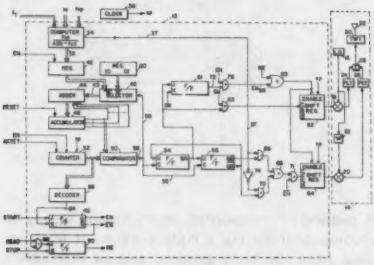


1. In an NMR spectrometer, comprising a superconducting magnet having a axial bore therethrough, a probe structure for containing, in operation, a sample to be investigated in the magnetic field of said superconducting magnet, an RF decoupler coil, said RF decoupler coil located adjacent the sample area within said probe, a double walled vacuum envelop assembly, said assembly having the space between said walls substantially evacuated, said assembly being located, in operation, between said RF decoupler coil and said sample zone of said probe, said space between said walls of said assembly including a material substantially filling said space for decreasing the collisional probability of excited ions in the space between the walls of said envelop.

4,240,034
DIGITAL FREQUENCY SYNTHESIZER

Oscar Lowenschuss, Goleta, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 11, 1978, Ser. No. 941,818
Int. Cl.³ H03K *3/78*
U.S. Cl. 328—14 **5 Claims**



1. A digital frequency synthesizer adapted to produce a signal having a frequency f, comprising:

(a) counter means, responsive to clock pulse signals having a pulse repetition frequency f_{cp}, for producing a first digital word representative of the number of counted clock pulses;

(b) adding means for cumulatively numerically adding a second digital word representative of f_{cp}/nf (where n is an even integer) each time a control signal indicates that the whole number portion of the cumulatively numerically added second digital word equals the first digital word;

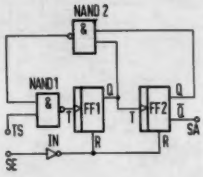
(c) comparator means fed by the first digital word and the whole number portion of the cumulatively numerically added second digital word for producing the control signal, such control signal being indicative of whether the whole number portion of the cumulatively numerically added second digital word is equal to or unequal to the first digital word; and

(d) output means responsive to the control signal for producing a signal having a frequency related to the frequency f.

4,240,035
DIGITAL DEMODULATOR ON A SEMICONDUCTOR BASE

Reinhard Täuber, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 19,137
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811753
Int. Cl.³ H03K *13/01*
U.S. Cl. 329—50 **7 Claims**



7. A digital demodulator, comprising:

first and second flip-flops and first and second NAND gates;

a reset input means of each flip-flop for connection to a signal to be demodulated;

a first logic input means of the first NAND gate for connection to an auxiliary signal;

a logic output means of the second flip-flop for providing a demodulated signal;

a logic output of the first NAND gate connecting to a pulse input of the first flip-flop;

a pulse output of the first flip-flop connecting to a first logic input of the second NAND gate and a pulse input of the second flip-flop;

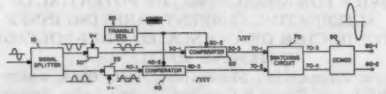
a pulse output of the second flip-flop connecting to a second logic input of the second NAND gate; and

a logic output of the second NAND gate connecting to a second logic input of the first NAND gate.

4,240,036
LINEARIZED THREE-STATE SWITCHING AMPLIFIER

Thomas P. Kohler, Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,615
Int. Cl.³ H03F *3/38*
U.S. Cl. 330—10 **6 Claims**



1. A pulse width modulated switching amplifier for amplifying an analog signal comprising:

(a) means for receiving the analog signal and producing positive and negative signals representative of positive and negative excursions of the analog signal, respectively;

(b) a first level shifter for receiving the positive signal and producing a first replica signal having the same waveshape as the positive signal but varying above and below a predetermined reference level;

(c) a second level shifter for receiving the negative signal

and producing a second replica signal having the same waveshape as the negative signal but varying above and below the predetermined reference level;

(d) a signal generator for producing a linear switching signal having a constant amplitude and alternating at a constant rate above and below the predetermined reference level;

(e) a first comparator for summing the magnitudes of the first replica signal and the switching signal and producing a first type of control signal when the sum is positive and producing a second type of control signal when the sum is negative;

(f) a second comparator for summing the magnitudes of the second replica signal and the switching signal and producing the first type of control signal when the sum is positive and producing the second type of control signal when the sum is negative;

(g) a switching circuit adapted to receive said control signals from the comparators and effective to produce an output pulse of one polarity when both comparators are producing the first type of control signal, an output pulse of the opposite polarity when both comparators are producing the second type of control signal and no output when the comparators are producing unlike control signals; and

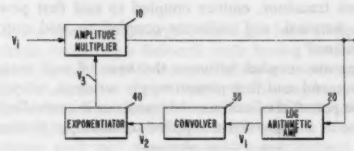
(h) a demodulator for receiving the output pulses and producing an amplified replica of the analog signal.

4,240,037

HOMOMORPHIC AUTOMATIC GAIN CONTROL

Lawrence M. Rubin, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 6, 1979, Ser. No. 46,072
Int. Cl.³ G05B 5/00
U.S. Cl. 330—127 **7 Claims**



1. An automatic gain control system, comprising the combination of:

a multiplying means, having input, output and feedback terminals, for multiplying the levels of input and feedback signals; and

homomorphic means, connected between the output and feedback terminals, for providing a feedback signal from the output terminal to said feedback terminals so as to compress the input signal to a predetermined level.

4,240,038

PREAMPLIFIER

Kenichi Hasegawa, Neyagawa; Hiroshi Taniguchi, Hiraksta, and Sadafumi Kitamura, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

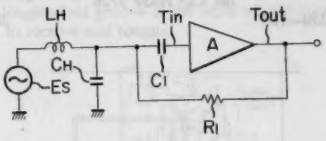
Filed Mar. 13, 1978, Ser. No. 885,513
Claims priority, application Japan, Mar. 23, 1977, 52/32453
Int. Cl.³ H03F 1/26; H04N 5/76
U.S. Cl. 330—149 **6 Claims**

1. A preamplifier for amplifying, a low level angularly modulated signal reproduced from a magnetic recording medium, said signal having at least an upper sideband and a predetermined carrier frequency, comprising:

signal input means including a resonant circuit comprising the inductance of a magnetic head and a capacitor, the resonant frequency of said resonant circuit being equal to or higher than said carrier frequency;

an amplifier having an input terminal coupled to said signal input means, and an output terminal; and

negative feedback circuit means including resistance means



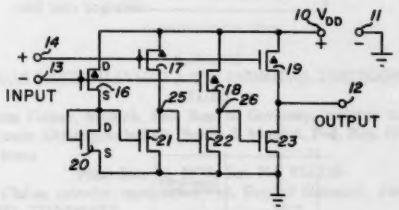
coupled between said input terminal and said output terminal for reducing the noise in said upper sideband at the output terminal of said amplifier gain of said amplifier in the vicinity of said resonant frequency.

4,240,039

MOS DIFFERENTIAL AMPLIFIER

Stephen K. Mihalich, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 11, 1979, Ser. No. 47,450
Int. Cl.³ H03F 3/45, 3/16
U.S. Cl. 330—253 **5 Claims**



1. A linear differential amplifier circuit having first and second differential input terminals and an output terminal, said circuit being adapted for MOS construction and comprising:

first and second supply rails connectible to a source of operating potential;

first, second, third and fourth stages, each of which comprises a depletion transistor connected in series with an enhancement transistor, the juncture thereof providing a stage output node, said depletion transistor having a drain electrode coupled to said first rail and said enhancement transistor having a source electrode coupled to said second rail;

means for coupling the gate electrode of said enhancement transistor in said first stage to said output node of said first stage;

means for coupling the gate electrode of said enhancement transistor of said second stage to said output node of said first stage;

means for coupling the gate electrode of said enhancement transistor of said third stage to said output node of second stage;

means for coupling the gate electrode of the enhancement transistor of said fourth stage to said output node of said third stage, said output node of said fourth stage providing said output terminal of said amplifier circuit;

means for coupling said first input terminal to the gate electrodes of the depletion transistors in said second and fourth stages; and

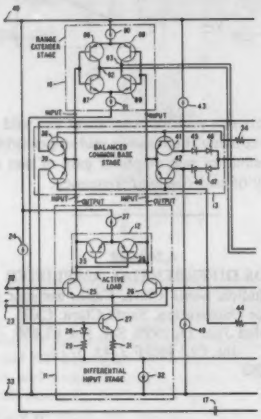
means for coupling said second input terminal to the gate electrodes of said depletion transistors in said first and third stages.

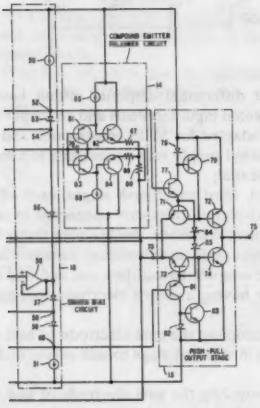
4,240,040

OPERATIONAL AMPLIFIER

Veikko R. Saari, Spring Lake Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 11, 1974, Ser. No. 441,352
Int. Cl.[2] H03F *3/26*
U.S. Cl. 330—255 25 Claims





16. In an operational amplifier circuit of the type including an output terminal, an inverting input terminal, a noninverting input terminal, a differential input stage; a common base stage connected to the output terminals of said differential input stage, and a push-pull output stage, the improvement comprising:

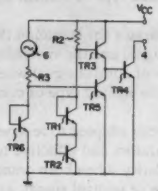
driven bias means, responsive to the signal applied to said noninverting input terminal for controlling the bias voltage applied to said differential input stage, said common base stage and said output stage, each of said controlled bias voltages related to said signal at said noninverting input terminal by a predetermined voltage differential.

4,240,041

HIGH-FREQUENCY AMPLIFIER CIRCUIT

Masaru Hashimoto, Ayase, and Motoaki Yoshinaga, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 5, 1979, Ser. No. 45,842
Claims priority, application Japan, Jun. 10, 1978, 53/70128
Int. Cl.[3] H03F *3/04, 3/34*
U.S. Cl. 330—288 6 Claims



6. A high-frequency amplifier circuit comprising:

input and output terminals,

first and second power supply terminals,

a first PN junction device coupled between said input terminal and said first power supply terminal,

current source means,

a series circuit of a plurality of PN junction devices coupled between said current source means and said first power supply terminal,

a first transistor with its base coupled to the junction between said current source means and said series circuit of the PN junction devices, and collector coupled to said second power supply terminal,

a second transistor with its base coupled to the emitter of said first transistor, emitter coupled to said first power supply terminal, and collector coupled to said output terminal, and

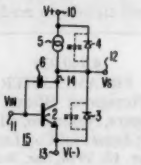
control means coupled between the base of said second transistor and said first power supply terminal, whereby the base potential of said second transistor is controlled in response to an input signal supplied to said input terminal.

4,240,042

BANDWIDTH LIMITED LARGE SIGNAL IC AMPLIFIER STAGE

Thomas J. Robe, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,237
Int. Cl.[3] H03F *1/26, 3/19*
U.S. Cl. 330—302 6 Claims



1. An amplifier stage comprising:

first and second terminals for applying relatively positive and relatively negative supply potentials thereto;

third and fourth terminals for supplying input and output signals respectively;

a transistor having input, common and output electrodes respectively connected to the third, second and fourth terminals;

load means connected between the first and fourth terminals;

means for by-passing said fourth terminal to said first terminal for relatively high frequencies including

first pn junction diode means connected in reverse-biased poling between the first and fourth terminals;

means for by-passing said fourth terminal to said second terminal for relatively high frequencies including

second pn junction diode means connected in reverse-biased poling between the second and fourth terminals whereby the first and second pn junction diode means are constrained from conducting in the forward direction and the sum of the capacitance associated with their pn junctions remains relatively constant for applied signal variations.

4,240,043

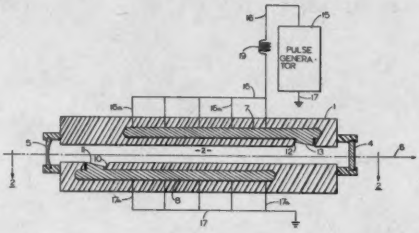
TRANSVERSE-LONGITUDINAL SEQUENTIAL DISCHARGE EXCITATION OF HIGH-PRESSURE LASER

Dietmar E. Rothe, Rancho Palos Verdes, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Dec. 7, 1978, Ser. No. 967,409

Int. Cl.³ H01S *3/097*

U.S. Cl. 331—94.5 PE **9 Claims**



1. An electric discharge excited gas laser comprising a gas volume defined by a dielectric body having an elongated open central space, beam-forming reflector means mounted on said body at respective ends of said volume, an elongated cathode electrode and an elongated anode electrode in said body substantially parallel to each other on opposite sides of said gas volume, each said electrode having a projection portion extending from one end thereof toward the opposite side of said gas volume, said projections being at opposite respective longitudinal ends of said gas volume, and said electrodes being embedded in said dielectric body except for having said projections, only, exposed directly to said gas volume, said electrodes forming a transverse predischarge path between the major, embedded, portions of their lengths and a longitudinal main discharge path between said projections.

4,240,044

PULSED LASER ELECTRODE ASSEMBLY

Theodore S. Fahlen, San Jose, and David J. Clark, Whittier, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 16, 1979, Ser. No. 57,927

Int. Cl.³ H01S *3/00*

U.S. Cl. 331—94.5 PE **7 Claims**

1. Laser electrodes for a gas discharge laser having a housing and power supply means comprising

an elongated conductive bar constituting an anode supported on and within said housing,

an elongated cathode coextensive with and parallel to and spaced from said anode and supported on and within said housing, the space between said anode and cathode constituting the laser discharge gap,

means for connecting said power supply means across said anode and said cathode for producing an electric discharge in said gap,

said cathode comprising:

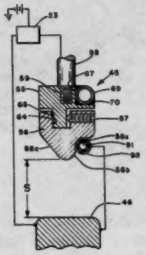
a carrier bar,

a cathode bar mounted on said carrier bar between said anode and said carrier bar,

means for adjusting the spacing between said cathode bar and said anode comprising:

a longitudinal tongue on one of said bars,

a longitudinal groove in the other of said bars adapted to receive said tongue,



the depth of insertion of said tongue in said groove being variable and corresponding to the spacing between sad bars, and

lock means on said one of said bars engageable with said tongue for releasably engaging the latter whereby to lock said bars together.

4,240,045

GAS LASER HAVING A CYLINDRICAL DISCHARGE TUBE

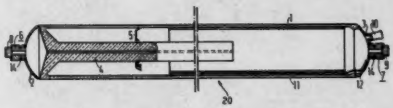
Hans Golser, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,118

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 77192393[U]

Int. Cl.³ H01S *3/03*

U.S. Cl. 331—94.5 D **1 Claim**



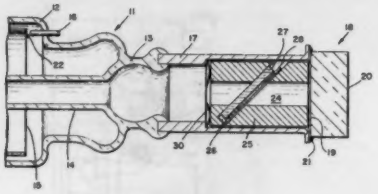
1. In a gas laser having a cylindrical discharge tube comprising a glass casing being sealed at its two ends by end caps, each of said end caps supporting a tubular metal component, each of the metal components supporting a reflector of an optical resonator and having a wall with a weakened, axial portion to enable an adjustment of the reflectors of the optical resonator, said casing having a capillary extending coaxially along a portion thereof with said capillary being permanently connected to the glass casing of the discharge tube adjacent one end cap and being supported in the casing by at least one spring element at an axially displaced position, a cold cathode being disposed in the casing adjacent the other of the two end caps and surrounding a portion of the capillary tube, said other end cap being a metal end cap and being connected to said cold cathode, and the metal component of the one cap being the anode, the improvement comprising the glass casing having a length of at least 40 cm and an outer diameter of at least 35 mm, said one end cap supporting said anode consisting of an insulating material, said capillary consisting of a ceramic and being glazed to said glass casing, and said casing containing a helium neon mixture so that the gas laser is a helium neon gas laser with an output power of at least 10 mW.

4,240,046

MOUNT FOR A LASER BREWSTER ANGLE WINDOW

William P. Kolb, Jr., Carlsbad, and Keith G. Schmidt, Vista, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 10, 1978, Ser. No. 949,826
Int. Cl.³ H01S 3/02
U.S. Cl. 331—94.5 D 3 Claims



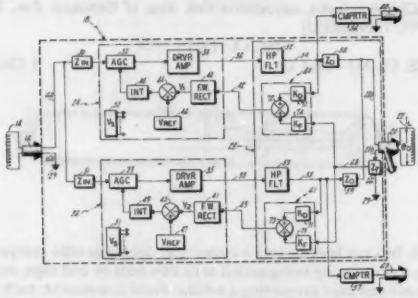
1. A Brewster window mount comprising:
an elongated annular sleeve having a transverse slot disposed at the Brewster angle for supporting a Brewster window mounted within said slot;
a Brewster window disposed within said slot; and
a leaf spring disposed within said transverse slot and adjacent to said Brewster window for maintaining said window in place.

4,240,047

MECHANICAL RESONATOR OSCILLATOR HAVING REDUNDANT PARALLEL DRIVE CIRCUITS

Charles M. Rabinowitz, Bloomfield, and Donald A. Camp, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 29, 1979, Ser. No. 53,452
Int. Cl.³ H03B 5/30
U.S. Cl. 331—154 6 Claims



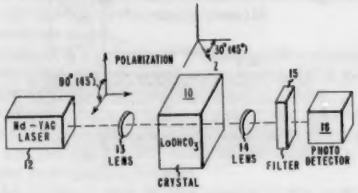
1. An improved mechanical oscillator of the type which includes a mechanical resonator and a resonator driver connected in a regenerative signal loop in which the driver receives the resonant frequency signal of the resonator and provides, in response thereto, a constant magnitude drive signal of equal frequency and supporting phase to the resonator to maintain a minimum amplitude for the resonant frequency signal, the improvement being a resonator driver comprising:
first and second signal amplifier means, each responsive to the resonant frequency signal from the resonator and each responsive to an associated sum feedback signal presented thereto, said first and second amplifier means each including a signal source for providing a reference signal definitive of the selected constant magnitude of the drive signal and each further including variable gain amplifier means responsive to said reference signal and said sum feedback signal for providing a gain amplification factor at a present value in dependence on a present difference signal magnitude therebetween, said first and second amplifiers each providing an output signal at a magnitude equal to the product of said amplification factor and the resonant frequency signal from the resonator; and
coupling network means, connected for response to said first and second amplifier means, for providing at an output thereof the drive signal at a constant magnitude equal to a proportionate sum of said output signal magnitudes, said network means providing to each of said first and second amplifier means separate sum feedback signals, each at a magnitude in dependence jointly on the drive signal magnitude and the associated amplifier means output signal magnitude.

4,240,048

NONLINEAR OPTICAL DEVICE

Fredrick C. Zumsteg, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 780,342, Mar. 23, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 969,865
Int. Cl.³ H02M 5/04; H03F 7/00
U.S. Cl. 332—7.51 14 Claims



1. Useful nonlinear optical device comprising:
(a) the crystal which:
(1) consists essentially of the compound of the formula $LnF_x(OH)_{1-x}CO_3$ wherein Ln is La, Eu or Gd and x is 0 to 1;
(2) is transparent to the radiation propagating therethrough; and
(3) has $\bar{6}$ or $\bar{6}m2$ symmetry;
(b) means for directing incident coherent plane polarized electromagnetic radiation of one or more frequencies into the crystal; and
(c) means for extracting from the crystal emerging coherent electromagnetic radiation having at least one frequency different from any frequency in the incident radiation, the crystal being positioned so that the angle between its optic axis and the direction of propagation of the incident radiation is such that the incident and emerging radiation are phase-matched within the crystal.

4,240,049

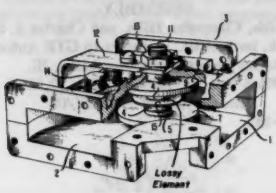
WAVEGUIDE JUNCTION CIRCULATOR HAVING SPURIOUS MODE ABSORBING MEANS

Joseph J. Kostelnick, Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 24, 1979, Ser. No. 78,554
Int. Cl.³ H01P 1/39, 1/162
U.S. Cl. 333—1.1 8 Claims

1. A microwave circulator comprising at least three waveguide sections (1, 2 and 3) converging at a central junction, a body of nonreciprocal gyromagnetic material (4) disposed at said junction to receive a microwave signal transmitted through said waveguide sections, and means (9 and 10) for applying a magnetic field of said body CHARACTERIZED IN THAT there is further included means for absorbing spuri-

ous modes created in said body comprising an element (15) including a thin layer (17) of lossy material disposed around a



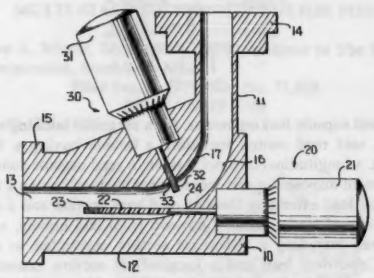
portion of the exterior surface of said body and perpendicular to the electric field of the transmitted signal.

4,240,050

TWO STUB TUNER IN WAVEGUIDE BEND

Robert C. Powell, Gaithersburg, Md., assignor to Weinschel Engineering Co., Inc., Gaithersburg, Md.

Filed Jun. 29, 1979, Ser. No. 53,343
Int. Cl.³ H01P 1/02
U.S. Cl. 333—33 **9 Claims**



1. A waveguide tuner for permitting adjustment to cancel out undesired reflected energy waves in a waveguide transmission system, said tuner comprising:

a waveguide bend adapted to be inserted in said waveguide transmission system and having first and second legs subtending an angle other than 180° between one another;

phase tuning means including a dielectric rod having a metal slug at one end thereof,said rod extending along said first leg from a first location in said waveguide bend intermediate said first and second legs, and further including first control means for selectively translating said rod and slug longitudinally along said first leg; and

magnitude tuning means including a metal stub extending transversely into said waveguide bend from a second location proximate said first location, and further comprising second control means for selectively varying the length of extension of said stub transversely into said waveguide bend.

4,240,051

HIGH FREQUENCY POWER COMBINER OR POWER DIVIDER

Paul O. Haugsjaa, Acton, and Joseph M. Lech, Westford, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 29, 1979, Ser. No. 53,499
Int. Cl.³ H01P 5/12
U.S. Cl. 333—127 **24 Claims**

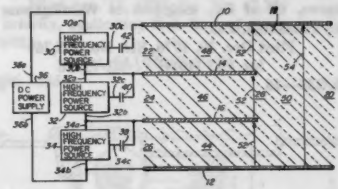
1. An apparatus for combining outputs of a plurality of serially connected high frequency power sources, each of said power source outputs being coupled to a reference potential for the next serially connected power source, said apparatus comprising:

a plurality of input ports, each having a different reference potential, for receiving high frequency power from the outputs of said serially connected high frequency power sources;

an output port; and

a sandwiched power combination structure configured to define a power combination region, a plurality of parallel input transmission lines coupled between said input ports and said power combination region, and an output transmission line coupled between said power combination region and said output port, said structure including

two outer conductive layers which extend from said input ports to said power combination region to form outer conductors of said input transmission lines and which



extend from said power combination region to said output port to form said output transmission line,

at least one intermediate conductive layer which extends from said input ports to said power combination region to form an inner conductor of said input transmission lines and which terminates in said power combination region, thereby forming said region,

said intermediate conductive layer acting as a power signal conductor for one input transmission line and as a reference potential conductor for the adjacent input transmission line, and

a dielectric layer between each pair of adjacent conductive layers

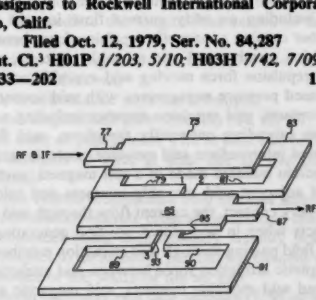
whereby high frequency power from said serially connected power sources propagates along each of said parallel input transmission lines, combines in said power combination region, and propagates along said output transmission line to said output port.

4,240,052

BALUN FILTER APPARATUS

Ben R. Hallford, Wylie, and Bruce C. Lutz, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 12, 1979, Ser. No. 84,287
Int. Cl.³ H01P 1/203, 5/10; H03H 7/42, 7/09
U.S. Cl. 333—202 **12 Claims**



1. Signal isolation apparatus for isolating first frequency f_1 signals from second frequency f_2 signals comprising, in combination:

ground plane means;

first and second (f_2 wavelength)/4 stubs extending from said ground plane means toward a first common area;

third and fourth (f_2 wavelength)/4 stubs extending from said ground plane means toward a second common area wherein said first common area and said second common area are separated by a distance of at least (f_2 wavelength)/4;

input signal transmission line means juxtaposed but separated from said first and second stubs; and

output signal transmission line means juxtaposed but separated from said third and fourth stubs.

4,240,053

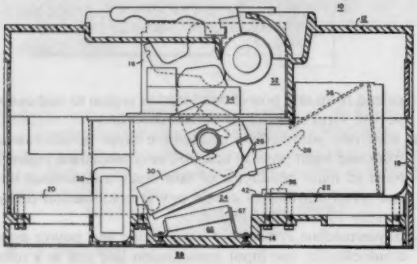
CIRCUIT BREAKER UTILIZING IMPROVED CURRENT CARRYING CONDUCTOR SYSTEM

Hugh A. Nelson, Plum Borough; John A. Wafer, Monroeville; Paul P. Koren, North Strabane Township, Washington County; Nicholas A. Salemi, Pittsburgh, and Alfred E. Maier, Chippewa, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 30, 1976, Ser. No. 755,769

Int. Cl.³ H01H *71/00, 73/36*

U.S. Cl. 335—16 **15 Claims**



1. A circuit breaker comprising:

first and second spaced-apart stationary contacts;

a plurality of movable contacts pivotally connected to said first stationary contact and operable together between open and closed positions with respect to said second stationary contact, said movable contacts, when in said closed position, conducting electrical current between said first and second stationary contacts;

means for effecting movement of said movable contacts between said open and closed positions;

a repulsion member made of an electrically conducting material disposed adjacent said movable contacts distal from said second stationary contact, the current flow through said movable contacts when in said closed position including an eddy current flow in said repulsion member causing a magnetic repulsion force between said repulsion member and said movable contacts, said magnetic repulsion force moving said movable contacts into increased pressure engagement with said second stationary contacts, said repulsion member including a plurality of fins extending outwardly therefrom, said fins being disposed intermediate said movable contacts; and

an attraction member made of a soft magnetic material disposed adjacent said movable contacts and said second stationary contact, the current flow through said movable contacts when in said closed position generating a magnetic field passing through said attraction member causing a magnetic attraction force between said attraction member and said movable contacts, said magnetic attraction force moving said movable contacts into increased pressure engagement with said second stationary contact, said repulsion member and said attraction member being disposed adjacent and on opposite sides of said plurality of movable contacts.

4,240,054

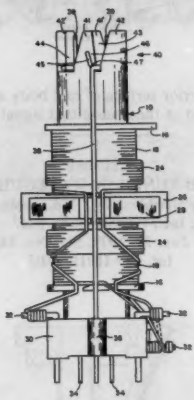
ARRANGEMENT FOR LOCKING A REED CAPSULE WITHIN A MAGNETIC LATCHING REED SWITCH ASSEMBLY

Sigitas Miknaitis, Clarendon Hills, and Charles J. Stastny, La Grange Park, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 16, 1979, Ser. No. 12,627

Int. Cl.³ H01H *1/66, 51/00*

U.S. Cl. 335—152 **6 Claims**



1. Reed capsule locking means, for a magnetic latching reed switch, said reed switch including a bobbin having a base portion, a longitudinal channel therein, a reed capsule switching element disposed in said longitudinal channel having a first electrical lead extending through said base portion and a second electrical lead extending upward from said bobbin, a return strap including a transverse section connected to said second electrical lead and a longitudinal section extending downward adjacent to the exterior of said bobbin, said locking means comprising:

a bobbin crown including at least first and second upstanding arms disposed about the periphery of said channel and forming a slot therebetween including a closed termination on one end; and

a deflectable member formed from a portion of said first upstanding arm adjacent to said slot and adapted to deflect inward when said return strap transverse section is inserted into said slot and returned outward when said strap is fully seated in said slot termination end, locking said reed capsule switching element to said bobbin.

4,240,055

RELEASE TYPE ELECTROMAGNETIC DEVICE FOR CAMERA

Masami Shimizu, Tokyo; Teiji Hashimoto, Kawasaki; Hideaki Miyakawa; Masanori Uchidoi, both of Yokohama; Hiroshi Aizawa, Kawasaki, and Tadashi Ito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1977, Ser. No. 847,744

Claims priority, application Japan, Nov. 15, 1976, 51-137117

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—234 **3 Claims**

1. A release type electromagnetic device for a camera, comprising:

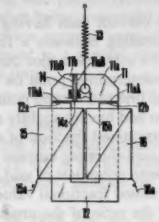
(a) integrally constructed pole pieces made of one of soft magnetic iron and 45 permalloy;

(b) a rare-earth permanent magnet;

(c) a normally de-energized coil operatively associated with said pole pieces and operable, when energized, to generate

a magnetic flux opposing the magnetic flux of said permanent magnet; and

(d) a movable, magnetizable armature which has pole faces and is disposed close to the ends of said pole pieces, said armature being made of one of soft magnetic iron and 45



permalloy, said permanent magnet being fixed between and completely separating the pole faces of said armature; only said pole pieces, said pole faces, and said permanent magnet forming a closed magnetic path; the permanent magnet having a thickness which is small relative to the total length of the magnetic path of the device.

4,240,056

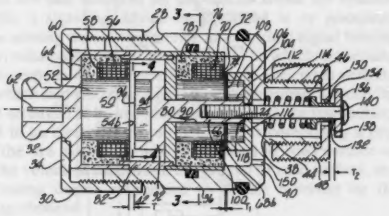
MULTI-STAGE SOLENOID ACTUATOR FOR EXTENDED STROKE

Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 4, 1979, Ser. No. 71,915

Int. Cl.³ H01F 7/08

U.S. Cl. 335—267 **9 Claims**



1. An apparatus comprising:

a housing defining a chamber therein and including a wall having at least a first opening there-through;

a first electromagnet located within said chamber opposite said first opening for producing a first magnetic field in response to electric command signals input thereto;

a second electromagnet having a passage therein, and located within said chamber between and apart from said first electromagnet and said wall for producing a second magnetic field in response to electric command signals input thereto;

an armature comprising:

a first member having a first pole face opposingly situated relative to said first electromagnet and responsive to said first magnetic field and maintained in the absence of command signals a first distance from said first electromagnet and having a portion extending opposite from said first pole face slidably received within and extending through said passage,

a second member located within said chamber between said second electromagnet and said wall having a second pole face thereon opposing situated relative to said second electromagnet and responsive to said second magnetic field wherein said second pole face is maintained in the absence of command signals, a second distance apart from said second electromagnet, said second member further including a second passage sized to telescopically receive said portion and a narrower coaxial third passage extending therethrough, said second member further including a shoulder joining said second and said third passages for engaging said extending portion,

a piston means slidably received through said third passage and operatively connected to said portion for biasing said portion against said shoulder to space said first and said second pole faces apart from said first and said second electromagnets.

4,240,057

INDUCTIVE ELEMENT CONSTRUCTION, PARTICULARLY FLUORESCENT LAMP BALLAST

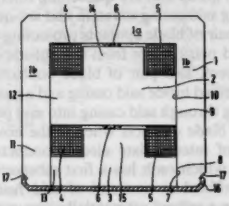
Friedrich Decher, Oberursel, and Günther Bachorz, Urbach, both of Fed. Rep. of Germany, assignors to Firma Hermann SCHWABE, Urbach, Fed. Rep. of Germany

Filed Aug. 17, 1979, Ser. No. 67,339

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836401

Int. Cl.³ H01F 27/26

U.S. Cl. 336—165 **9 Claims**



1. Inductive element construction, particularly for a fluorescent lamp ballast or transformer, comprising

an outer, essentially U-shaped core structure (1, 100) of one-piece construction having a connecting cross element (1*a*, 101*a*) and two parallel leg elements (1*b*, 101*b*);

a separate closing cross element (3, 3') positioned between the open ends of the parallel leg elements and in magnetically coupled engagement therewith, to form a closed outer magnetic circuit;

a separate central cross element (2, 2', 2'') positioned between the parallel leg elements (1*b*, 101*b*) and located intermediate the connecting cross element (1*a*, 101*a*) and the closing cross element (3, 3');

central longitudinal core elements (14, 15, 14', 14'') extending parallel to said leg elements (1*b*, 101*b*) and being located intermediate the longitudinal extend of said cross elements,

and electrical winding means (4, 5) wound over one of said central core elements,

wherein, in accordance with the invention,

the central longitudinal core elements (14, 15, 14', 14'') terminate short of engagement with at least one of the facing cross elements to form at least one air gap (6, 20, 22) therewith,

at least one central longitudinal core element being integral with one of said separate cross elements, said one separate cross element being longitudinally slidably positionable with respect to an adjacent parallel leg element to permit adjustment of the width of the air gap;

and wherein the outer end face surfaces (7, 9) of said separate core elements are in magnetically coupled engagement with the inner facing surfaces (8, 10) of the parallel leg elements (1*b*, 101*b*) to form a contacting magnetic circuit therewith.

4,240,058

FUSE TERMINAL CONNECTOR FOR ONE OR MORE ELECTRIC FUSES

Frederick J. Kozacka, South Hampton, and Richard A. Belcher, Hampton Falls, both of N.H., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 20, 1979, Ser. No. 68,238
Int. Cl.[3] H01F 7/08
U.S. Cl. 337—231 5 Claims

1. An electric fuse comprising a tubular casing of electric insulating material, an arc-quenching filler inside said casing, a fusible element inside said arc-quenching filler, a pair of terminal caps closing said casing to retain said arc-quenching filler in said casing, a pair of blade contacts projecting through the end surfaces of said pair of caps from the outside of said casing to the inside thereof, said pair of blade contacts each having a perforation situated inside said casing and a pair of support pins each projecting through said casing into said perforation in one of said pair of blade contacts wherein the novel feature comprises a pair of intermediate electroconductive elements of sheet metal of which each has a first substantially planar arm conductively affixed to one end of said fusible element, of which each has a second substantially planar arm arranged in spaced relation from and parallel to said first arm conductively affixed to the axially inner ends of one said pair of blade contacts, each of said pair of intermediate electroconductive elements further including substantially planar tie means arranged in angular relation to and conductively connecting the axially outer end of each first arm to the axially inner end of each second arm.

4,240,059

CURRENT DIVIDER FOR A CURRENT SENSING TRANSDUCER

Joachim E. Wolf, and Philip F. Locke, Jr., both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 5, 1979, Ser. No. 27,432
Int. Cl.[3] H01C 7/00
U.S. Cl. 338—49 8 Claims

1. A current divider formed by an integral conductor for splitting a widely varying current to be sampled into fixed and predetermined fractions thereof, comprising:

opposite terminal ends;

a first major current path extending between said terminal ends;

a second major current path extending between said terminal ends;

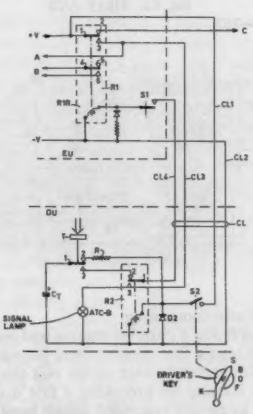
and a shunting current path having a fixed cross-sectional area and extending between a first fixed and predetermined point on said first major current path and a second fixed and predetermined point on said second major current path, said first and second points being displaced from a null position and having slightly different voltage potentials, a predetermined fraction of said current to be sampled flows in said shunting current path in response to said different voltage potentials of said first and second points, said predetermined fractional value of current flows independently of the ratio of the cross-sectional areas of said current paths such that said current flowing in said shunting current path is increased by increasing said displacement from said null position and decreased by decreasing said displacement from said null position.

4,240,060

METHOD AND DEVICE FOR SWITCHING-OFF A SUPERVISION SYSTEM

Lars-Göran T. Andersson, Järfälla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,895
Claims priority, application Sweden, Dec. 29, 1975, 7514653
Int. Cl.[3] G08B 29/00
U.S. Cl. 340—47 10 Claims



1. A circuit device for switching-off a supervision system which provides electronic processing of supervision information supplied thereto and to initiate, dependent on the result of said processing, at least one predetermined supervision function by influencing the operating condition of at least one control loop comprising, first and second operating members having first and second positions, a contact device coupled to said control loop and responsive to said first and second operating members whereby the contact device may be activated to block said supervision function, the contact device including a plurality of individual contact elements connected to said one control loop and arranged to control the control loop so that the associated supervision function is blocked when the contact device is activated, a time controlled activation current loop coupled to the contact device and comprising a time circuit arranged to allow an activation current to be supplied to the contact device during a predetermined period of time, a first contact member responsive to the first operating member

and arranged to close the time controlled activation current loop when said first operating member is brought to its second position, and a time independent activation current loop coupled to the contact device and comprising a second contact member in series with one further contact element which conducts a current during said predetermined period of time, said second contact member being connected so as to close the time independent activation current loop when the second operating member is moved to a second position within said predetermined period of time.

4,240,061

DEVICES FOR THE MEASUREMENT OF THE PHYSICAL STATE OF A PNEUMATIC TIRE

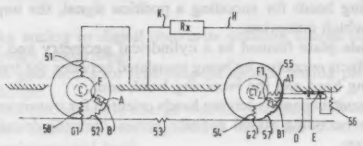
Ellis Cohen, Glasgow, Scotland, assignor to Dunlop Limited, London, England

Filed Feb. 23, 1979, Ser. No. 14,614

Claims priority, application United Kingdom, Mar. 4, 1978, 8680/78; Nov. 30, 1978, 46730/78

Int. Cl.³ B60C *23/04*

U.S. Cl. 340—58 **7 Claims**



1. A system for conveying to the driver of a vehicle information concerning the physical state of a pneumatic tire fitted to a wheel of the vehicle comprising a sensing device associated with the tire and mounted on the tire or wheel for rotation therewith, a signaling device incorporated in or associated with the sensing device to generate an electrical signal bearing a known relationship to the physical state to which the sensing device is responsive, a transmitting element associated with the tire to which said electrical signal is communicated, a receiving element arranged to be in communication with the transmitting element in an electrical circuit path means comprising a portion of the tire in contact with the ground or road surface on which the vehicle is supported, the ground or road surface, and an indicating device responsive to signals received by the receiving element.

4,240,062

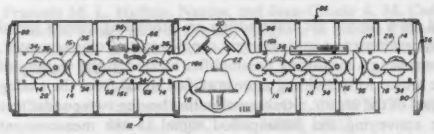
FLASHING LIGHT WARNING SYSTEM FOR VEHICLES

Earl W. Gosswiller, Clarendon Hills, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.

Filed Jan. 9, 1978, Ser. No. 868,075

Int. Cl.³ B60Q *1/46*; B61L *29/24*; G02B *5/12*; F21V *21/30*

U.S. Cl. 340—81 R **8 Claims**



1. A flashing light warning system for mounting on the roof of a vehicle comprising, in combination, at least four individual light assemblies each including a light source and reflector, said reflector portion of each of said light assemblies being rotatable about a generally vertical axis for producing generally horizontal light flashes in different radial directions, said light assemblies being mounted in a common housing in generally side-by-side relation spaced transversely across the width of a vehicle roof on which said housing is mounted, certain of said reflectors being oriented in different rotational positions with respect to other reflectors to produce a predetermined sequence of flashes from different ones of said light assemblies, each of said reflectors being interconnected with one another to maintain the relative orientation between them during rotation thereof, and motor drive means for conjointly rotating said reflectors.

4,240,063

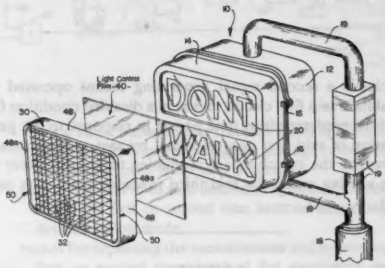
VISOR ASSEMBLY FOR PEDESTRIAN TRAFFIC SIGNAL

Samuel Gould, San Pedro, and James S. Gould, Los Alamitos, both of Calif., assignors to Indicator Controls Corp., Gardena, Calif.

Filed Jul. 23, 1979, Ser. No. 59,545

Int. Cl.³ E01F *9/00*; F21V *17/00*

U.S. Cl. 340—119 **2 Claims**



1. In combination with a pedestrian traffic signal of the type having legends selectively illuminated by light sources within the housing of the signal, a grating mounted on the housing in front of the legends composed of a multiplicity of intersecting webs forming a plurality of openings through which the legends are exposed and illuminated by the light sources within the housing; a frame extending around and supporting the webs, said frame having a rim portion extending inwardly from the perimeter of the frame in coplanar relationship with the front of the frame; and at least one elongated bracket having two integral elongated portions positioned at essentially 90° to one another, one of the portions extending under the surface of the rim, and the other of the portions abutting the surface of an adjacent one of said webs and being slotted to receive the webs intersecting said adjacent one of said webs, the respective portions of said bracket being attached to said rim and to said adjacent one of said webs.

4,240,064

POWER LIMITING CIRCUIT FOR BAR CODE READER

Rathindra N. DevChoudhury, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 11, 1978, Ser. No. 941,503

Int. Cl.² G06K *7/14*

U.S. Cl. 340—146.3 AG **14 Claims**

1. A circuit for intermittently supplying power to a sensing system comprising,

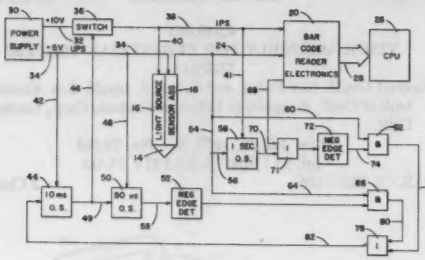
(a) sensing means for providing a first control signal when in a sensing position and a second control signal when in a non-sensing position;

(b) switch means operable to supply power to the sensing system;

(c) first circuit means coupled to said sensing means and said switch means, said circuit means including a plurality of first signal generating means for intermittently enabling said switch means for a first predetermined time period and disabling said switch means for a second predetermined time period in response to the generation of said

second control signal by said sensing means, said circuit means being disabled upon the generation of said first control signal by said sensing means to enable said switch means to supply power to the sensing system;

(d) and second circuit means coupled to said sensing means and said first circuit means, said second circuit means



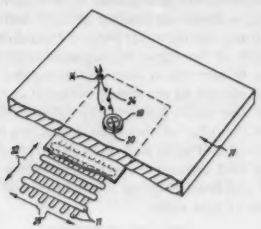
includes a second signal generating means operated to maintain said first circuit means in a disabled condition for a third predetermined time period in response to the generation of said first control signal by said sensing means whereby the switch means is enabled to supply power to the sensing means for said third predetermined time period.

4,240,065

POSITION SENSING APPARATUS

Ernest Howbrook, Cheadle Hulme, England, assignor to Wigmore Professional Data Services Ltd., London, England

Filed Dec. 13, 1978, Ser. No. 969,214
Int. Cl.³ G08C *21/00*; H04N *1/00*
U.S. Cl. 340—146.3 SY **7 Claims**



1. Position sensing apparatus comprising:

a first coil arrangement comprising a multiplicity of at least three coil loops each shaped to have a length greater than its width and mounted with their major axes lateral to each other and occupying a defined area;

a second coil arrangement positioned so as to be loosely coupled electromagnetically to the first coil arrangement over said defined area;

means for applying an alternating current input signal to one coil arrangement;

phase shifting units connected with the coil loops of the first coil arrangement so that the coil loops and units define a network having a progressive angle phase change characteristic; and

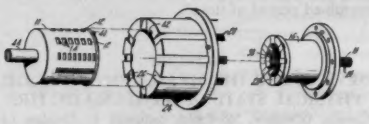
output terminals for said network so that at the output terminals, a signal is produced which is characterized by progressive phase shift to be unambiguously representative of the relative positioning of the two coil arrangements.

4,240,066

CYLINDRICAL ENCODER FOR USE WITH FIBER OPTICS

Thomas G. Lenox, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 14, 1979, Ser. No. 48,430
Int. Cl.³ G05B *11/18*; G06F *3/14*; G08C *9/06*
U.S. Cl. 340—870.29 **4 Claims**



1. In a fiber optic encoding device of the type having a transmitting head including a plurality of light ways and a receiving head including a plurality of light ways corresponding to the light ways of the transmitting head and of the type having a code plate disposed between the transmitting and receiving heads for encoding a position signal, the improvement which comprises:

a code plate formed to a cylindrical geometry and which effects encoding by being translated between the transmitting head and the receiving head; and

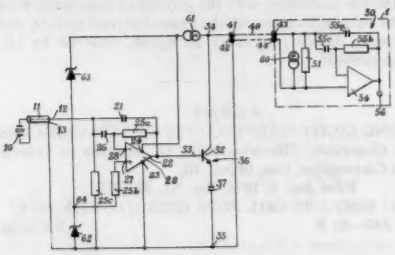
transmitting and receiving heads oriented for transmission of an encoding signal radially across the cylindrical code plate.

4,240,067

DEVICE FOR THE TRANSMISSION BY LOAD VARIATION OF AN ALTERNATING ANALOG SIGNAL FROM A SENSOR

Jacques Forme, Paris, France, assignor to Societe Chauvin Arnoux, Paris, France

Filed Apr. 12, 1979, Ser. No. 29,440
Claims priority, application France, Apr. 18, 1978, 78 11352
Int. Cl.³ G08C *19/10*
U.S. Cl. 340—870.37 **6 Claims**



1. In a device for transmitting an alternating analog signal from a sensor to a measurement room remote from the sensor, comprising a measuring preamplifier located in the vicinity of the sensor for providing a preamplified signal from the analog signal of the sensor, a transmission line having two conductors for conveying the preamplified signal to the measurement room, an electronic measuring circuit located in the measurement room and receiving the transmitted preamplified signal for providing an output signal representing the signal from the sensor, and a power supply circuit located in the measurement room and comprising a constant DC current generator connected to supply terminals of the measuring preamplifier through the transmission line, the improvement consisting in that an electric charge generator is inserted between the preamplifier and the transmission line for generating an electric charge proportional to the preamplified signal received at its

input, and the electronic measuring circuit comprises an electric charge amplifier.

4,240,068

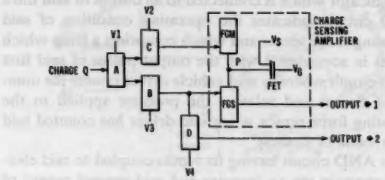
CCD ANALOG TO DIGITAL CONVERTER

Roland J. Handy, Northridge, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 23, 1978, Ser. No. 918,251

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD **6 Claims**



1. An analog to digital converter utilizing charge coupled technology comprising:

input gate means for receiving the applied analog packet of charge,

second gate means in charge transfer proximity to said input gate means for receiving charge therefrom in excess of a predetermined level,

third gate means also in charge transfer proximity to said input gate means for receiving charge therefrom below a predetermined level,

fourth gate means in charge transfer proximity to said second gate means for receiving any said excess charge received from said input gate means,

fifth gate means in charge transfer proximity to said third and fourth gate means and directly responsive to the presence of said excess charge in said fourth gate means to thereby inhibit the transfer of any charge in said third gate means when said fourth gate means detects any of said excess charge transferred by said second gate means, and

sixth gate means in charge transfer proximity to said third gate means for receiving and transferring any said charge below said predetermined level received from said input gate means subsequent to when said fifth gate means was inhibited due to the presence of said excess charge in said fourth gate means and thus blocked the receipt and transfer of charge from said third gate means, the output from said fifth and sixth gate means being one of three pairs of digital logic voltage signals representing the presence of charge received, an excess of charge received, or no charge received, respectively, at said input gate means.

4,240,069

ANGLE CODER WITH VARIABLE INPUT ANGLE

Francois M. L. Hullein, Nantes, and Jean-Claude A. M. Cadet, Nort S. Erdre, both of France, assignors to Societe d'Etudes, Recherches et Constructions Electroniques SERCEL, Carquefou, France

Filed Oct. 17, 1978, Ser. No. 952,210

Claims priority, application France, Oct. 20, 1977, 77 31615

Int. Cl.³ G08C *9/06*; H03K *13/02*

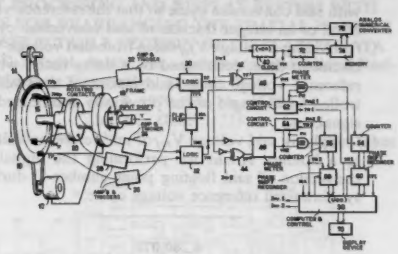
U.S. Cl. 340—347 P **12 Claims**

1. In an angular coder of the type comprising a rotating disk bearing a series of regular angularly spaced radial markings capable of being detected by at least one stationary reference detector, and a mobile measuring detector mounted on a rotatable shaft having an axis coaxial to the axis of rotation of the disk, the detectors facing the path of the rotating radial markings, said coder comprising means for measuring the angular offset between the detectors, said means comprising means for measuring a first time interval which is the time interval separating the passage of a marking in front of one of the detectors and an immediately subsequent passage of a marking in front of another detector,

the improvement comprising:

means for measuring a second time interval which is the time interval separating the passage of a substantially middle point between two successive markings in front of a detector and the immediately subsequent passage of a marking in front of another detector,

means for determining whether a time interval measured



has a value between one fraction x and another fraction y of the duration separating the passage of two consecutive markings in front of a detector,

means responsive to said determining means for recording either the first or second time interval according to the determination made,

means for repeating the measurement and recording of the first or second time interval for successive markings passing in front of said one detector, and

means for calculating an average of the successive recorded measurements.

4,240,070

VARIABLE DIGITAL TO ANALOG CONVERTER

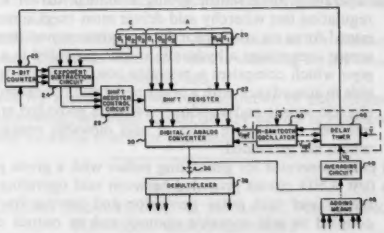
Klaus Helbig, Zeist, Netherlands, and Eike Rietsch, Celle-Wietzenbruch, Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 843,926, Oct. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 588,535, Jun. 19, 1975, abandoned. This application Jul. 19, 1979, Ser. No. 59,089

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1974, 2430018

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 DA **11 Claims**



1. An improved method for converting and steplessly compressing digital values of signals with a wide dynamic range into analog signals and for subsequent visual display and monitoring purposes, each digital value being represented as floating point number in the form

$$Q = \pm AB^{K-E}$$

wherein A represents a mantissa, B represents a radix—prefer-

ably 2,4,8,16—, E represents an exponent, and K represents a binary number—, subjecting said floating point number Q to a D/A-converter-, and providing a variable reference voltage V_R for controlling the digital-analog conversion of said floating point number Q; said improvement comprising the steps of

(1) periodically generating said reference voltage V_R in a sawtooth oscillator in a manner that the amplitude rises exponentially from a predetermined minimum value V_o to a predetermined maximum BV_o value during each reference voltage cycle;

(2) synchronizing said reference voltage cycle in accordance with said conversion cycle so that the reference voltage is equal or an integer fraction of said conversion cycle;

(3) providing a voltage V_{ref} taken from said voltage V_R at an instant of time, determined by a delay timer, within the reference voltage cycle, said instant of time being controlled by averages of the previously determined analog signal; and

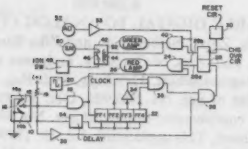
(4) supplying said voltage V_{ref} of said reference voltage V_R to a holding circuit for performing the digital/analog conversion of said floating point number Q during said synchronized reference voltage cycle.

4,240,071

DIGITAL CIRCUIT FOR CONDITIONING THE OPERATION OF A MOTOR VEHICLE UPON THE TESTED MOTOR ABILITY OF THE OPERATOR

Takeshi Ochiai, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 814,393, Jul. 11, 1977, abandoned. This application Mar. 13, 1979, Ser. No. 20,050
Claims priority, application Japan, Jul. 9, 1976, 51-82328
Int. Cl.³ G08B *23/00*; B60K *27/08*
U.S. Cl. 340—576 **1 Claim**



1. An apparatus for prohibiting operation of a motor vehicle by a person with impaired motor ability comprising:

an operating force sensor giving a vehicle driver a static regulation test whereby said driver must exert a predetermined force on said sensor for a predetermined time, said sensor comprising a hydraulic switch provided in a brake pipe which comprises a movable contact which is movable in accordance with a brake pedal and connected to an electric source and stationary contacts provided at given intervals at opposite sides of said movable contact and which are grounded;

a pulse generator for generating pulses with a given period;

a first AND circuit provided between said operating force sensor and said pulse generator and having its inputs coupled to said movable contact and an output of said pulse generator;

a counting circuit which is connected to an output of said first AND circuit and which counts output pulses thereof;

a judging circuit which is connected to an output end of said counting circuit, said judging circuit judging if a counted value of the counting circuit meets a given value and sends out an output only when the counting value meets given value;

a second AND circuit provided between said judging circuit and said operating force circuit having one input connected to an output of said judging circuit and the other input coupled to said movable contact via an inverter;

a transfer circuit having a first and second outputs, said transfer circuit having an input coupled to an output of said second AND circuit, said transfer circuit normally producing only an output signal on said first output, said transfer circuit further only producing an output signal on said second output when said second AND circuit generates an output signal;

a third AND circuit having its inputs coupled to said first output of said transfer circuit, said first AND circuit and an electric generator through an inverter;

a first indicator which is connected to an output of said third AND circuit indicates the operating condition of said operating force sensor and which comprises a lamp which flashes in accordance with the output pulses of said first AND circuit whereby said vehicle driver counts the number of flashes and releases the pressure applied to the operating force sensor when said driver has counted said given value of flashes;

a fourth AND circuit having its inputs coupled to said electric generator via an inverter and said second output of said transfer circuit;

a second indicator which is connected to an output of said fourth AND circuit indicates that the driver has applied said predetermined force on said sensor for said predetermined time and has counted the given value of flashes of said first indicator; and

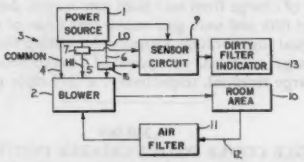
a relay circuit which is connected to an output of said fourth AND circuit in parallel with said second indicator, said relay circuit comprising an ignition switch, a normally open contact for controlling electric conduction with a starter motor and a coil for operating said normally open contact.

4,240,072

LOAD INDICATOR FOR AN AIR CLEANER

Thomas P. Fowler, Madison, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed Mar. 19, 1979, Ser. No. 21,720
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—664 **6 Claims**

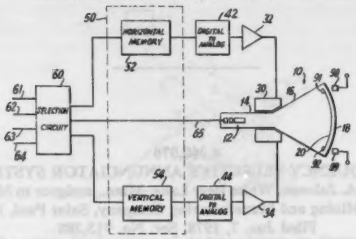


1. A load indicator to provide an early warning of a contaminated air cleaner within an air movement system by monitoring the electrical energy supplied through an energy conducting circuit lead to an air movement fan within the air movement system used for conducting air to a designated area, said load indicator comprising energy sensor means including a closed loop flux conducting circuit removably connected to surround said conducting circuit lead to generate a magnetic flux signal output substantially proportional to the energy flow through said lead, and indicating means having an input connected to operatively respond to said flux signal output to provide an early warning signal indicating a contaminated air cleaner by sensing a decrease in the magnitude of electrical energy flowing through the circuit lead.

4,240,073
CATHODE RAY TUBE DISPLAY SYSTEM WITH DISPLAY LOCATION MEMORY

Peter Seats, Boonton, N.J., and Henry O. Marcy, Oak Brook, Ill., assignors to Thomas Electronics, Inc., Wayne, N.J.

Filed May 15, 1978, Ser. No. 906,051
Int. Cl.[3] G06F 3/14
U.S. Cl. 340—703 25 Claims

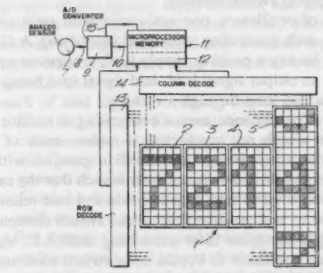


1. A multicolor display apparatus comprising
a cathode ray tube having an electron gun for emitting an electron beam and an electron beam activated display screen comprising a plurality of elements,
a memory for recording the addresses of locations of such elements on the display screen,
address selection circuit means connected to the memory to cause the memory to provide the address of a selected location, and
electron beam deflection means responsive to the output of the memory for deflecting the electron beam to the location having the address specified by the memory output.

4,240,074
ELECTRICAL DIGITAL DISPLAY INDICATORS

Harry Gibson, Bredon, and Peter F. Maycock, Cheltenham, both of England, assignors to Smiths Industries Limited, Cricklewood, England

Filed Feb. 12, 1979, Ser. No. 11,588
Claims priority, application United Kingdom, Feb. 17, 1978, 6406/78
Int. Cl.[2] G08B 25/00; G06F 3/14; G09F 9/32
U.S. Cl. 340—753 12 Claims

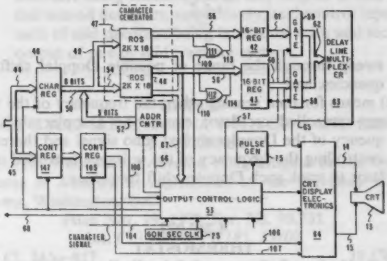


1. An electrical indicator for providing a digital display representation of the value of an input variable, the indicator including a plurality of adjacent display areas, each said display area comprising a matrix array of electrically energisable elements that are arranged to be selectively energised to provide a display representation of a digit of a plural digit number, and energising means effecting displacement of the least-significant digit of said number within its respective display area in accordance with change in value of said input variable, the said energising means effecting displacement of a more-significant digit of said number within its respective display area in synchronism with an adjacent less-significant digit only when said energising means effects displacement of said less-significant digit between its highest value and its lowest value, the said more-significant digit remaining stationary within its respective display area for all other changes in value of said input variable.

4,240,075
TEXT PROCESSING AND DISPLAY SYSTEM WITH MEANS FOR REARRANGING THE SPATIAL FORMAT OF A SELECTABLE SECTION OF DISPLAYED DATA

Charles R. Bringol, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,894
Int. Cl.[3] G06F 3/153
U.S. Cl. 340—798 13 Claims



1. A text processing and display system comprising:
a display device for simultaneously displaying a plurality of lines of alphanumeric characters,
matrix storage means for storing data representative of the positions of the displayed characters in successive lines of ordered storage locations spatially corresponding to the positions of said characters in said display,
means for sequentially storing the coded data representations of said displayed characters in the same sequence as said ordered storage locations of said position representative data for said respective characters in said matrix storage means,
repetitive display scanning means for traversing ordered character display positions in successive lines on said display device,
means for scanning the ordered storage locations in said matrix storage means in synchronization with said display scanning,
means for accessing the data representations for characters being displayed when said matrix scanning means senses a stored character position, and
means for applying signals representative of said character data being displayed to said display device in response to said accessed character representation.

4,240,076
STARTING CIRCUIT FOR AUTOMATIC FREQUENCY CONTROL ARRANGEMENT

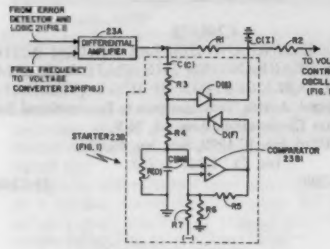
James Williamson, Franklin, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 5, 1978, Ser. No. 912,600
Int. Cl.[3] G01S 13/00; H03B 3/04
U.S. Cl. 343—7 PL 1 Claim

1. In an inverse receiver using a first local oscillator whose frequency is to be automatically controlled to track a Doppler-shifted echo signal, the control signal for such purpose being derived from the output signal of a voltage-controlled oscillator tunable through a frequency spectrum encompassing the

range of possible Doppler shift frequencies of echo signals to be received, circuitry for initiating and maintaining operation of the voltage-controlled oscillator, such circuitry comprising:

(a) means for initially setting the frequency of the voltage-controlled oscillator at a frequency higher than the highest possible Doppler shift frequencies and then decreasing the frequency of the voltage-controlled oscillator to



sweep through the range of possible Doppler shift frequencies; and

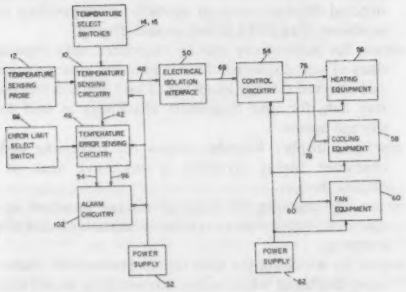
(b) means for then sensing when the frequency of the voltage-controlled oscillator equals the Doppler shift frequency of the Doppler-shifted echo signal and thereafter controlling the frequency of the voltage-controlled oscillator to track such Doppler shift frequency.

4,240,077

THERMOSTAT

Paul R. Hughes, Sudbury, and John E. Campbell, Brookline, both of Mass., assignors to United Brands Company, New York, N.Y.

Filed Mar. 2, 1978, Ser. No. 882,885
Int. Cl.³ G08B *23/00, 21/00;* F25B *49/00;* G05D *23/24*
U.S. Cl. 340—500 **12 Claims**



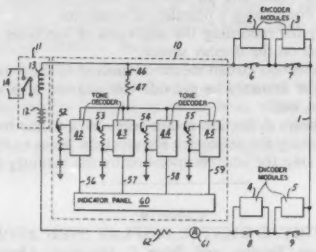
1. A temperature monitoring and control circuit for monitoring the temperature of products within an enclosure which can have various critical temperature characteristics, comprising a bridge circuit formed by temperature sensing and reference branches that provide respectively temperature signal and reference signal outputs, said bridge circuit including means to vary a desired set point temperature at which said outputs are equal, a bridge amplifier having as inputs said temperature signal and reference signal outputs and constructed to generate an error signal output dependent upon the difference between said inputs, a temperature control means responsive to said error signal, effective to change the thermal condition in said enclosure in a sense to reduced said error signal, and an error sensing alarm-activating circuit which includes upper and lower detectors, each detector having as one input a function of said error signal and as a second input, respectively, upper and lower reference values, each detector having an output serving as an alarm activating signal, respectively for upper and lower danger conditions, and a control means independent of said bridge circuit and bridge amplifier connected to selectively adjust said error sensing alarm-activating circuit to simultaneously vary the effective thresholds of both of said detectors thereby to enable variation of the size of the error signal required to establish an alarm-activating condition in a manner that is independent of the set point temperature and of said temperature control means.

4,240,078

FREQUENCY SELECTIVE ANNUNCIATOR SYSTEM

Donald A. Jalonen, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 7, 1978, Ser. No. 913,288
Int. Cl.³ G08B *25/00*
U.S. Cl. 340—524 **3 Claims**



1. An electronic annunciator system comprising

a conductive loop having a plurality of switch elements in series in said loop, said switch elements being openable upon the occurrence of a selected event,

a D.C. power source for generating a supervisory voltage and supervisory current in said loop, the polarity of said power source defining a positive side and a negative side for an opened switch element,

a plurality of oscillators, one associated with each switch element, each generating individual identifying A.C. signals and having a positive supply lead, a negative supply lead and an output signal lead, said signal lead being connected to said loop through a resistor,

a plurality of impedance means comprising a resistor and capacitor which are connected in series, each of said impedance means being connected in parallel with an associated one of said switch elements such that the capacitor is connected to said negative side and said resistor is connected to said positive side of said switch element for providing a bandpass filter permitting said A.C. signals from a said oscillator to bypass open switch elements,

said positive supply lead of each oscillator being connected at the junction of the resistor and capacitor of an associated one of said impedance means and said negative supply lead being connected to said negative side of said associated switch element such that opening of said switch element energizes said oscillator and said impedance means acts as a power supply filter to stabilize the loop voltage and current used by said oscillators, and

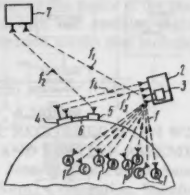
frequency decoder means coupled to said loop, responsive to the frequency identifying signals of said oscillators for individually indicating the operation of said oscillators.

4,240,079

SYSTEM FOR LOCATING MOBILE OBJECTS IN DISTRESS

Viktor A. Zhilin, Vitebsky prospekt, 81, korpus 1, kv. 72, Leningrad, U.S.S.R.

Filed Aug. 24, 1978, Ser. No. 936,648
Claims priority, application U.S.S.R., Feb. 7, 1978, 2571001
Int. Cl.³ H04B 7/00
U.S. Cl. 343—100 ST **6 Claims**



1. A system for location of mobile objects in distress comprising:

emergency radio stations each provided on one of the mobile objects and energized in the event of trouble with said mobile objects for transmission of distress messages by means of phase-shift-keyed signals occupying the common frequency band and representing a sequence of two components alternating in accordance with the message transmitted, said emergency radio stations being subdivided into groups each having a particular pattern of each of said components of said phase-shift-keyed signal;

at least one low orbiting earth satellite for retransmission of the signals emitted by said emergency radio stations;

at least one receiving station for reception of the signals retransmitted by said low orbiting earth satellite, reproduction of transmitted messages, and location of said mobile objects;

at least one control station for tracking of said earth satellite and measurement of the ephemeris thereof;

a communication link for connection of said receiving station with said control station;

said receiving station comprises a receiving antenna, a receiver having an input and an output, said input of said receiver being connected to said receiving antenna, a reference-frequency oscillator having an output, a plurality of signal processing means equal in number to said groups of emergency radio stations, and a computer for calculation of the coordinates of said emergency radio stations having a first input and a second input, said first input of said computer being connected with said communication link;

each of said signal processing means comprising: a first filter and a second filter matched to said first and second components, respectively, of the signals emitted by the emergency radio stations belonging to one of said groups of said emergency radio stations, each of said filters having an input connected with said output of said receiver, and an output;

a first detector and a second detector each having an input and an output, said inputs of said first and second detectors being connected with said outputs of said first and second filters, respectively;

an adder having a first input and a second input and an output, said first and second inputs of said adder being connected with said outputs of said first and second detectors, respectively;

tracking systems with a second-order astaticism for measurement of the running phase of the envelopes of the signals received from said emergency radio stations, each of said tracking systems having a first and a second input and a first and a second output; said first inputs of said tracking systems being connected with said output of said reference-frequency oscillator;

said first outputs of said tracking systems being connected with said second input of said computer;

gates equal in number to said tracking systems, said gates each having a signal input, inhibit inputs with their number equal to the number of said tracking systems minus one, and an output, said signal input of each of said gates being connected to said input of said adder, said output of each of said gates being connected to said second input of one of said tracking systems, said inhibit inputs of each of said gates being connected with said second outputs of the remaining tracking systems, respectively; and

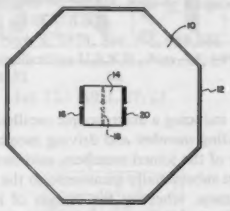
decoders for decoding of the messages transmitted by said emergency radio stations, the number of said decoders being equal to that of said tracking systems, each of said decoders having a first input, a second input, and a control input, said first and second inputs of each of said decoders being connected with said outputs of said first and second detectors, respectively, said control input of each of said decoders being connected with said second output of one of said tracking systems.

4,240,080

SHORT BACKFIRE ANTENNA WITH SUM AND ERROR PATTERNS

Oakley M. Woodward, Princeton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 19, 1979, Ser. No. 95,731
Int. Cl.³ H01Q 19/185, 25/02
U.S. Cl. 343—817 **10 Claims**



1. A radio-frequency directional antenna comprising:

a first reflector plate having an axially extending peripheral rim;

a second reflector disc disposed centrally and parallel to said first plate and spaced from said plate and rim at a given distance along a common longitudinal axis, the width of said second reflector being a relatively small fraction of that of said first reflector;

a plurality of parallel dipole feed elements positioned symmetrically about said axis at a given distance between said first and second reflectors; and

means for applying electromagnetic energy to said dipole feed elements to provide sum and error radiation distribution patterns in the H-plane.

4,240,081

INK JET PRINTING

Edmund B. Devitt, Wayland, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

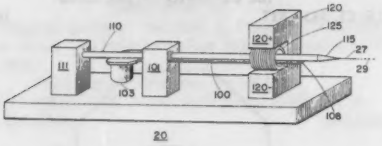
Filed Oct. 13, 1978, Ser. No. 951,101
Int. Cl.³ G01D 15/18
U.S. Cl. 346—75 **10 Claims**

1. Apparatus for forming images on a record member with droplets of ink, comprising:

a. a record member;

b. means for projecting a stream of ink toward the record member, said projecting means including an ink projecting member in the form of a capillary tube having two ends with an axis along which the ink is projected, a nozzle capping said capillary tube at one end, means for supplying ink to the capillary tube under pressure to cause a stream of the ink to be projected from the nozzle toward the record member, and a capillary tube mount to which the capillary tube is fixed at the end opposite said nozzle;

c. a driving member which is joined to said ink projecting member, comprising a metal reed, a reed clamp located at the midsection of said capillary tube before the end of the reed to fix the metal reed in position, and means for inducing microscopic longitudinal vibrations of the joined metal reed and capillary tube, yoked to said metal reed between said capillary tube mount and said reed clamp, comprising an ultrasonic transducing means yoked to an end of said metal reed, away from said nozzle, including a metal paddle extension of said metal reed which is of the same thickness as the metal reed, but of greater width, and a piezoelectric ceramic element appended to the underside of the metal paddle extension and of considerably greater thickness than said metal paddle extension, with a potential difference being applied between said metal paddle extension and a lower surface of said piezoelectric ceramic element to cause a microscopic vibration of the element, a longitudinal component of which is transmitted through said metal paddle extension to said metal reed;



d. means for inducing a macroscopic oscillation of the joined ink projecting member and driving member at a resonant frequency of the joined members, said oscillation being in a direction substantially transverse to the axis of the projecting means, whereby the stream of ink is projected within a plane of trajectory variation defined by the axis of the projecting means and the direction of oscillation;

e. closed loop feedback means for ensuring that the joined projecting member and driving member oscillate at or near the resonant frequency of the driving member over time;

f. means for electrostatically charging drops of ink at a point at which the stream breaks up into individual drops;

g. means for controlling said charging means to form two charge groups having either a "deflection" or a "no deflection" charge on drops emerging from the projecting means during predetermined portions of the oscillation period;

h. means for inducing the deflection of drops bearing a "deflection" charge in a direction substantially transverse to the plane of trajectory variation, while allowing the drops bearing a "no deflection" charge to remain on course;

i. means for intercepting drops in one of the two charge groups after deflection of the drops bearing a "deflection" charge; and

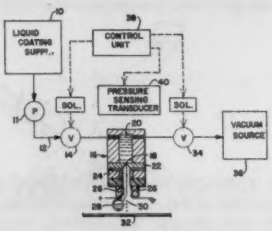
j. means for causing a relative movement of the record member in a direction substantially transverse to the plane of trajectory variation, whereby the drops of the nonintercepted charge group are deposited on the record member to form an image.

4,240,082

MOMENTUMLESS SHUTDOWN OF A JET DROP RECORDER

James H. Yu, Spring Valley, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 28, 1979, Ser. No. 15,887
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **10 Claims**



1. In a jet drop coating system comprising a coating head provided with a plurality of orifices and a manifold for delivery of liquid coating material to said orifices, improved momentumless shutdown apparatus comprising:

an inlet in said coating head,

an inlet valve means connected to said inlet,

an outlet in said coating head,

an outlet valve means connected to said outlet,

a source of vacuum connected to said outlet valve means, and

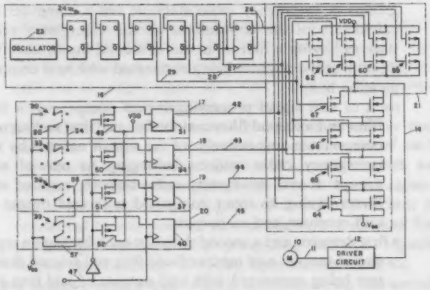
controller means, in electrical connection with said inlet valve means, said outlet valve means, and said manifold, for closing said inlet valve means and opening said outlet valve means at a point when the pressure in said manifold is slightly above the minimum pressure required to maintain jet straightness.

4,240,083

PROGRAMMABLE STRIP CHART RECORDER

John C. Stires, III, Box 988, Rambla de las Flores, Rancho Santa Fe, Calif. 92067

Filed Sep. 28, 1978, Ser. No. 946,795
Int. Cl.² G01D *15/24*
U.S. Cl. 346—136 **4 Claims**



1. A strip chart recorder, comprising

a stepper motor for advancing a recording medium from a roll by a predetermined distance upon each step of the motor; and

a recording duration controller coupled to the motor for controlling the frequency at which the motor is stepped;

wherein the controller comprises:

selector means for selectively varying the frequency at which the motor is stepped; and

wherein the selector means comprises:

timing means having a given number of outputs for providing timing pulses at different predetermined frequencies at different respective outputs;

a like number of frequency selection means, each including a switch for selecting one of said predetermined frequencies, and means for providing an enabling signal in response to the actuation of the switch; and

logic means coupled to the timing means and the given number of frequency selection means for providing a control signal for stepping the motor at the predetermined frequency associated with said enabling signal provided by the frequency selection means that includes said actuated switch.

4,240,084

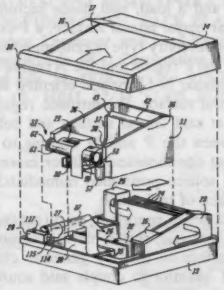
ELECTROGRAPHIC RECORDER WITH WRITING, DEVELOPING AND DRIVING ASSEMBLY

Thomas A. Tacklind, San Jose, and Ian Turner, Sunnyvale, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1979, Ser. No. 79,675

Int. Cl.³ G01D *15/06*; G03G *15/00*

U.S. Cl. 346—153 **7 Claims**



1. An electrographic recorder including a housing within which are located a support chassis for storing and feeding a supply of record bearing material, means for storing liquid developer material, electical control means, and writing means electromechanically connected to said electrical control means, said recorder being characterized by including

a unit assembly comprising developing means, driving means for transporting said record bearing material and means for receiving said writing means, and

means for mounting said unit assembly upon said support chassis,

whereby said developing means, said driving means and said writing means, when accepted in said receiving means, are each located relative to one another in their proper operative position and alignment for feeding and marking the record bearing material.

4,240,085

ELECTROGRAPHIC RECORDER

Thomas A. Tacklind, San Jose, and Ian Turner, Sunnyvale, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1979, Ser. No. 79,677

Int. Cl.³ G01D *15/06*; G03G *15/00*

U.S. Cl. 346—153 **18 Claims**

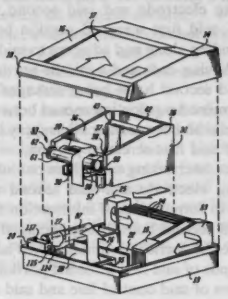
1. An electrographic recorder of modular construction including a trough-like rectangular base for receiving machine components and a cover overlying said base to define an enclosure therewith, said recorder being characterized by

a plurality of zones within said enclosure including

a liquid developer zone within which are disposed all liquid containing elements, and

an air plenum zone through which air is driven, and

a rectangular support chassis having walls extending upwardly towards said cover, said chassis being substantially



centrally located on said base, and wherein said liquid developer zone and said air plenum zone cumulatively surround the four sides thereof.

4,240,086

FILM CRYOTRON

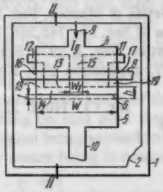
Petr E. Kandyba, korpus 438, kv. 11, Moscow, 103498; Dmitry P. Kolesnikov, korpus 301b, kv. 111, Moscow, 103482; Nina I. Komarovskikh, korpus 431, kv. 116, Moscow, 103498; Vadim P. Lavrischev, ploschad Junosti, 4, kv. 22, Moscow; Gennady M. Lapir, korpus 851, kv. 69, Moscow, 103527; Vladimir I. Makhov, korpus 406, kv. 84, Moscow, 103498; Vasily K. Semenov, and Anatoly N. Samus, both of korpus 337, kv. 4, Moscow, 103482, all of U.S.S.R.

Filed Nov. 9, 1978, Ser. No. 959,246

Claims priority, application U.S.S.R., Nov. 25, 1977, 2550720; Jun. 26, 1978, 2630151

Int. Cl.³ H01L *27/12*

U.S. Cl. 357—4 **4 Claims**



1. A film cryotron comprising:

a superconducting ground plane;

a first superconducting electrode arranged on said superconducting ground plane and electrically insulated therefrom;

a second superconducting electrode arranged on said superconducting ground plane and electrically insulated therefrom;

an elongated distributed Josephson junction for interconnecting said first superconducting electrode and said second superconducting electrode;

respective supply lines connected to said first and second superconducting electrodes, respectively;

a first hole provided in said superconducting ground plane opposite a given one of said first superconducting electrode and said second superconducting electrode;

a second hole provided in said superconducting ground plane opposite said given one of said first superconducting electrode and said second superconducting electrode;

at least one superconducting control line arranged above

said given one of said first superconducting electrode and said second superconducting electrode;

said first and second holes being arranged so as to form a first screened portion in said given one of said first superconducting electrode and said second superconducting electrode, said first screened portion being shaped as a strip extending along and adjacent to said Josephson junction and having ends and a middle portion;

said first and second holes being arranged so as to form a second screened portion interposed between said first and second holes and connecting said supply line to the middle portion of said first screened portion;

a control line intersecting said given one of said first superconducting electrode and said second superconducting electrode to form points of intersection therebetween;

said first and second holes being arranged so as to form a third screened portion comprising two halves which connect the ends of said first screened portion to the points of intersection of said control line and said electrode;

said first screened portion being connected to said second screened portion and said third screened portion, respectively, so as to define respective widths of said second screened portion and said third screened portion at said connection with said first screened portion, said first screened portion being of a certain width, the widths of said second and third screened portions at the points of their connection to said first portion being no greater than the certain width of said first screened portion.

4,240,087

SCREENING ELECTRODES FOR OPTICAL SEMICONDUCTOR COMPONENTS

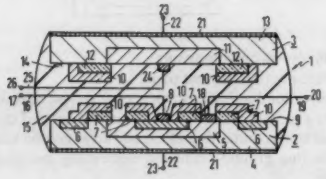
Gerhard Krause, Rosenheim, and Werner Spaeth, Holzkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 745,356, Nov. 26, 1976. This application Nov. 2, 1978, Ser. No. 956,906

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1975, 2554626

Int. Cl.³ H01L *21/12*

U.S. Cl. 357—19 **12 Claims**



1. In an optoelectronic coupler having a semiconducting optical transmitter with a p-n junction, a semiconducting optical receiver with a p-n junction, and a transparent sealing compound interposed therebetween, the improvement comprising an insulating layer overlying a portion of at least one of the two semiconductor zones forming one of said p-n junctions, said insulating layer being disposed in the path of optical radiation passing from said transmitter to said receiver and a transparent, electrically conductive screen layer overlying said insulating layer, said screen layer being electrically connected to one of said two semiconductor zones.

4,240,088

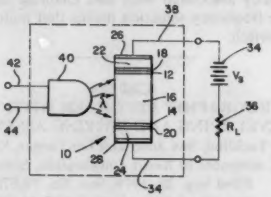
SEMICONDUCTOR HIGH-VOLTAGE SWITCH

William C. Myers, Burlington, Mass., assignor to Semicon, Inc., Burlington, Mass.

Continuation of Ser. No. 871,952, Jan. 24, 1978, abandoned, which is a continuation of Ser. No. 682,992, May 4, 1976, abandoned, which is a continuation of Ser. No. 475,721, Jun. 3, 1974, abandoned. This application Aug. 8, 1979, Ser. No. 64,661

Int. Cl.³ H01L *31/12*

U.S. Cl. 357—19 **9 Claims**



1. A high voltage, high speed switch comprising: A. at least one PIN diode connected in a reverse-bias direction between a voltage source and a load, said diode including at least one essentially planar major lateral surface, a P-conductivity type region, an N-conductivity type region, an essentially intrinsic I region between the P region and the N region and a planar P-I junction and a planar N-I junction oriented substantially normal to said lateral surface, the intrinsic region of said diode being exposed at said lateral surface and being of sufficient dimension between the P and N regions to sustain reverse voltages of about one thousand volts or more; and

B. an optical source positioned immediately adjacent said lateral surface of said diode

(1) oriented, when energized, to direct radiation onto the exposed intrinsic region of said diode through said lateral surface to thereby generate charge carriers in sufficient quantity to couple said source to said load, and

(2) connected for energization separately from said PIN diode.

4,240,089

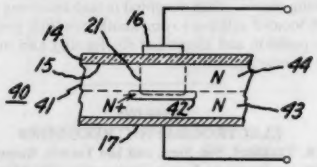
LINEARIZED CHARGE TRANSFER DEVICES

William E. Engeler, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 591,637, Jun. 30, 1975, abandoned. This application Oct. 18, 1978, Ser. No. 952,413

Int. Cl.³ H01L *29/78*; G11C *19/28*

U.S. Cl. 357—24 **1 Claim**



1. In combination,

a substrate of one conductivity type semiconductor material having a first layer and a second layer, said first layer being of substantially uniform thickness and overlying said second layer, the resistivity of said first layer being substantially greater than the resistivity of said second layer,

an insulator overlying said first layer,

a conductor member overlying said insulator member,

said second layer includes a first region of low resistivity and

a second region of higher resistivity, said first region underlying said conductor member and substantially coextensive with said conductor member in a plane through said first region parallel to the plane of said conductor member, said first region being bounded within said plane by said second region,

means for applying a voltage between said conductor member and said second layer to deplete entirely of majority carriers the portion of said first layer underlying said conductor member and to deplete at least a portion of said second layer underlying said conductor member, said first layer being sufficiently thick so that substantially all of the potential drop produced by said voltage in said layers appears across said first layer,

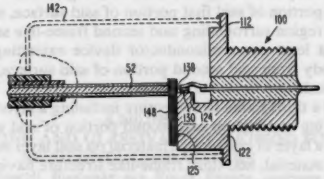
means for introducing charge in the form of minority carriers corresponding to a signal into said portion of said first layer in a manner to cause the surface potential thereof to change in absolute magnitude while still maintaining depletion in at least a portion of said second layer whereby the change in surface potential of said depleted portion of said first layer is substantially linearly proportional to the charge introduced therein.

4,240,090

ELECTROLUMINESCENT SEMICONDUCTOR DEVICE WITH FIBER-OPTIC FACE PLATE

Frederick R. Hughes, Lancaster, and Paul Nyul, New Holland, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 14, 1978, Ser. No. 915,309
Int. Cl.³ H01L *27/14, 31/00, 23/02*
U.S. Cl. 357—30 **8 Claims**



1. An electroluminescent semiconductor device comprising:

an electroluminescent semiconductor element having regions of opposite conductivity type forming a PN junction therebetween and a light emitting surface extending transversely across the PN junction, said electroluminescent semiconductor element adapted to emit a beam of light from the light emitting surface, and

a fiber optic face plate extending across said light emitting surface of the electroluminescent semiconductor element so that the light beam emitted from the electroluminescent semiconductor element will pass through the face plate.

4,240,091

SEMICONDUCTOR CONTROLLED RECTIFIER DEVICE WITH SMALL AREA DV/DT SELF-PROTECTING MEANS

Tsutomu Yatsuo; Atsuo Watanabe, and Yoshiteru Shimizu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 22, 1979, Ser. No. 68,571
Claims priority, application Japan, Aug. 23, 1978, 53-101820
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **8 Claims**

1. A self-protected semiconductor controlled rectifier device comprising:

(i) a main thyristor section including,

a first layer of a first conductivity type,

a second layer of a second conductivity type, being adjacent to said first layer for forming a first PN junction therewith,

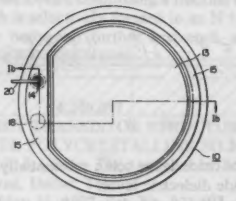
a third layer of said first conductivity type, being adjacent to said second layer for forming a second PN junction therewith,

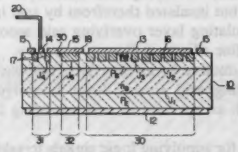
a fourth layer of said second conductivity type, being ajacent to said third layer for forming a third PN junction and having an exposed surface,

a first main electrode in ohmic contact with at least the surface of said first layer, and

a second main electrode in ohmic contact with at least the surface of said fourth layer;

(ii) a pilot thyristor section including said first, second, and third layers, said first electrode, and a fifth layer, said fifth layer being isolated from said fourth layer by said third layer, adjacent to said third layer for forming a fourth PN junction therewith, having an exposed surface, being smaller in area than said fourth layer, and being adapted to operate in association with said main thyristor thereby to turn on said main thyristor section when said pilot thyristor section is turned on;





(iii) an auxiliary pilot thyristor section including said first, second, and third layers, said first main electrode, and a sixth layer of said second conductivity type, said sixth layer being isolated from said fourth layer, having an exposed surface, forming a fifth PN junction with said third layer, and being smaller in area than said fourth area;

(iv) a gate means in contact with a part of the surface of said third layer for turning on said pilot thyristor section in response to a gate signal being applied to said gate means;

(v) first auxiliary gate means being in contact with said fifth layer; and

(vi) second auxiliary gate means being in contact with said sixth layer;

the improvement wherein:

(vii) said auxiliary pilot thyristor section is triggered with a voltage increasing rate dV/dt lower than those of said pilot thyristor section and said main thyristor section, and

(viii) the whole peripheral region of said fifth PN junction is short-circuited by said second auxiliary gate means.

4,240,092

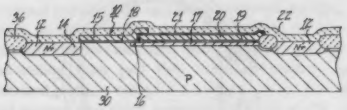
RANDOM ACCESS MEMORY CELL WITH DIFFERENT CAPACITOR AND TRANSISTOR OXIDE THICKNESS

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 13, 1976, Ser. No. 722,841
Int. Cl.³ H01L *27/04, 29/78*
U.S. Cl. 357—41 **18 Claims**

1. An N-channel silicon gate random access memory cell having an insulated gate field effect transistor and a capacitor, said transistor having a source-to-drain path and a gate, comprising:

(a) a body of P-type silicon having a major face;
(b) an N+ type region defined in said major face and defining one end of said source-to-drain path of said transistor;
(c) a capacitor region in said major face spaced from said N+ type region and defining a lower plate of said capacitor, said capacitor region being ion implanted with N-type conductivity determining impurity;
(d) a thin oxide dielectric layer overlying said capacitor region;
(e) a first layer of polycrystalline silicon overlying said dielectric layer and defining an upper plate of said capacitor;
(f) an insulating coating over said first layer of polycrystalline silicon;
(g) a transistor channel region in said major face between said N+ type region and said capacitor region, the channel region defining said source-to-drain path;
(h) a thin gate oxide layer overlying said channel region, the



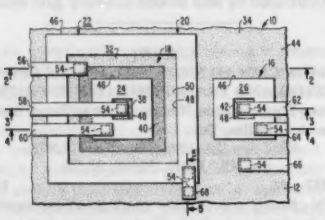
thin gate oxide layer being substantially thicker than said thin oxide dielectric layer;
(i) a second layer of polycrystalline silicon overlying said gate oxide layer to define said gate of said transistor and also partly overlying said first layer of polycrystalline silicon but insulated therefrom by said insulating coating;
(j) an insulating layer overlying said second layer of polycrystalline silicon;
(k) a conductive layer overlying said insulating layer and contacting said second layer of polycrystalline silicon through an aperture in said insulating layer at a contact area;
(l) means for supplying logic signals to said N+ type region at at least two voltage levels, one of the levels being at a reference potential and the other being a positive voltage compared to the reference potential;
(m) means for applying a bias voltage to said first layer of polycrystalline silicon, the bias voltage having a magnitude about half said positive voltage.

4,240,093

INTEGRATED CIRCUIT DEVICE INCLUDING BOTH N-CHANNEL AND P-CHANNEL INSULATED GATE FIELD EFFECT TRANSISTORS

Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 585,874, Jun. 11, 1975, abandoned. This application Dec. 10, 1976, Ser. No. 749,410
Int. Cl.³ H01L *27/02, 29/78, 29/34*
U.S. Cl. 357—42 **11 Claims**



1. An integrated circuit device comprising:

(a) a body of semiconductor material predominantly of one conductivity type, said body having a surface;
(b) a first frame-like structure including a layer of insulating material on said surface and a layer of conductive material on said layer of insulating material, said first frame-like structure having a closed geometry which encloses a first portion of said surface and separates said first portion of said surface from a second portion of said surface;
(c) a well region having a conductivity type opposite that of said body, said well region extending into said body only from said first portion of said surface;
(d) means for making ohmic contact to said well region, said means being totally surrounded by said first frame-like structure and comprising a part of said first portion of said surface;
(e) at least one semiconductor device extending into said well region from said first portion of said surface, said semiconductor device comprising:
(i) a second frame-like structure including a layer of insulating material on said first portion of said surface and a layer of conductive material on said layer of insulating material, said second frame-like structure having a closed geometry separating an outer portion of said first portion of said surface from an inner portion of said first portion of said surface;
(ii) a first region of the same conductivity type as said body extending into said well region from said inner portion of said first portion of said surface, said first region being surrounded by said second frame-like structure;
(iii) a second region of the same conductivity type as said body extending into said well region from said outer portion of said first portion of said surface, said second region surrounding said second frame-like structure;
(f) at least one semiconductor device extending into said body from said second portion of said surface, said semiconductor device comprising:
(i) a third frame-like structure including a layer of insulating material on said second portion of said surface and a layer of conductive material on said layer of insulating material, said third frame-like structure having a closed geometry separating an outer portion of said second portion of said surface from an inner portion of said second portion of said surface,
(ii) a third region of opposite conductivity type to said body extending into said body from said inner portion of said second portion of said surface, said third region being surrounded by said third frame-like structure;
(iii) a fourth region of opposite conductivity type to said body extending into said body from said outer portion of said second portion of said surface, said fourth region surrounding said third frame-like structure.

4,240,094

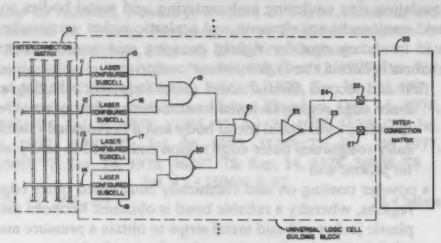
LASER-CONFIGURED LOGIC ARRAY

Jim M. Mader, Indialantic, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Mar. 20, 1978, Ser. No. 887,968
Int. Cl.³ H01L *21/88, 29/52, 27/10*
U.S. Cl. 357—45 **37 Claims**

33. A logic circuit device comprising:
a semiconductor substrate which contains a plurality of logic elements from which the logic circuit device is formed, each logic element containing a plurality of semiconductor elements together with intraelement semiconductor and metallization connection paths, and interconnection pathways by way of which said logic elements are connected together, and
prescribed portions of selected ones of said logic elements having been altered by the impingement of electromagnetic energy thereon with selected portions of said semiconductor connection paths having been disconnected and selected portions of said metallization connection

paths having been interconnected to selected semiconductor material of said logic elements to define the transfer



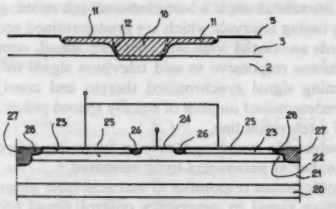
function of said selected ones of said logic elements to cause said logic circuit device to perform a specified logic operation.

4,240,095

GROOVING AND GLASSIVATING METHOD FOR SEMICONDUCTOR WAFERS

Pierre C. Rossetti, Fontenay aux Roses, France, assignor to Le Silicium Semiconducteur SSC, Paris, France

Filed Nov. 21, 1978, Ser. No. 962,802
Claims priority, application France, Nov. 28, 1977, 77 35732
Int. Cl.³ H01L 27/12
U.S. Cl. 357—49 **8 Claims**



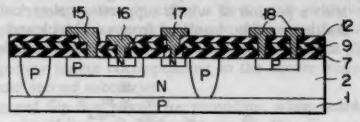
1. A structure for passivating a semiconductor wafer at the limits of the elementary chips to be obtained therefrom in accordance with a selected pattern, said wafer having alternate layers of different semiconductive material, said structure having at least one first groove depending from a surface of said wafer in accordance with said pattern and at least one second groove substantially centered within said first groove in accordance with said pattern, said second groove being deeper and narrower relative to said first groove, a stepped groove for receiving a passivating agent being thereby obtained wherein said second groove intersects an interface between alternate layers and said first groove does not reach said interface.

4,240,096

FLUORINE-DOPED P TYPE SILICON

Shunichi Hiraki, Yokohama; Kuniaki Kumamaru, Kawasaki; Masaharu Aoyama, Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 19, 1978, Ser. No. 952,777
Claims priority, application Japan, Oct. 20, 1977, 52-125070
Int. Cl.³ H01L 29/167
U.S. Cl. 357—63 **4 Claims**



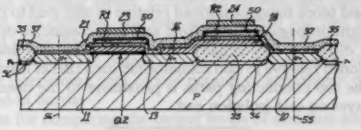
1. A semiconductor device comprising a fluorine ion implantation region which is selectively formed in an N type Group IV semiconductor body and further activated, said region thereby constituting a P type region.

4,240,097

FIELD-EFFECT TRANSISTOR STRUCTURE IN MULTILEVEL POLYCRYSTALLINE SILICON

Joseph H. Raymond, Jr., Katy, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1977, Ser. No. 801,697
Int. Cl.³ H01L 23/48, 29/46, 29/54
U.S. Cl. 357—71 **4 Claims**



1. A field-effect transistor device comprising a semiconductor body, the first layer being doped with conductivity-determining impurity at a first level to function as a conductor, conductive means connected to the first layer to apply bias voltage thereto, a second layer of crystalline silicon on said face overlying at least part of the first layer and insulated therefrom by a thin insulating layer of thickness such that the voltage on the first layer significantly influences conduction in the second level through said thin insulating layer, the second level including a part which is closely adjacent and overlying the first level and which is doped with conductivity-determining impurity at a second level which is less than said first level to function as an element having more impedence than said first level, and regions connected to opposite ends of said part and containing conductivity-determining impurity to render the regions more highly conductive than said part.

4,240,098

SEMICONDUCTOR OPTOELECTRONIC DEVICE PACKAGE

Peter S. Zory, Ossining; Frederick W. Scholl, Riverdale, and Harry F. Lockwood, New York, all of N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 28, 1978, Ser. No. 946,592
Int. Cl.³ H01L 23/02, 23/12, 39/02
U.S. Cl. 357—74 **21 Claims**

1. A semiconductor optoelectronic device package comprising:

(a) a metallic stud comprising pedestal and screw portions of high thermal conductivity material;

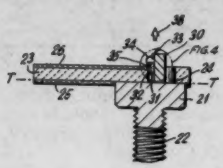
(b) an elongated insulator tab, a portion of the bottom of

which is mounted on top of said stud, said insulator tab provided with (1) an opening therethrough at the mounted end, (2) an electrically conducting path along the bottom of said insulator tab, perpendicular to and making electrical contact to said stud and (3) at least one electrically conducting path on the top of said insulator tab, perpendicular to an axial plane of said stud, terminating at said opening;

(c) a block comprising high thermal conductivity material including

(1) at least one isolation pad configured on said block, at least a portion of which supports an electrically conducting coating, insulated from said block and

(2) at least one optoelectronic semiconductor device com-



prising adjacent regions of opposite conductivity forming at least one p-n junction and mounted on said block, one of said regions being electrically and thermally connected to said block, another of said regions being electrically connected to said conductive portion of said isolation pad,

said block being mounted through the opening in the insulator tab and attached to the top of said stud to provide electrical and thermal conductivity therebetween, said block being positioned relative to said stud to provide light propagation to or from said semiconductor device in a direction substantially coaxial with the stud and positioned relative to said insulator tab such that at least one of the top conducting paths is proximate to the conductive layer on said isolation pad.

4,240,099

SEMICONDUCTOR DEVICE PLASTIC JACKET HAVING FIRST AND SECOND ANNULAR SHEET METAL STRIPS WITH CORRUGATED OUTER EDGES EMBEDDED IN SAID PLASTIC JACKET

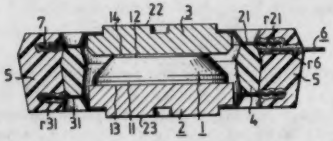
Jürgen Brandt; Ludwig Herold; Wolfgang Pikorz, and Alois Sonntag, all of Warstein, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,607

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810416

Int. Cl.³ H01L 23/42, 23/44, 23/46

U.S. Cl. 357—79 **5 Claims**



1. A high performance wafer-shaped semiconductor device including a wafer-shaped semiconductor element having first and second opposed major surfaces; first and second electrodes on the first and second major surfaces respectively of said semiconductor element; first and second cylindrical metal bodies each having an inner surface contacting said first and second electrodes, respectively, and an outer surface, said metal bodies serving as means for making electrical connections to said semiconductor element and for dissipating heat; an insulating ring enclosing and centering said metal bodies and said semiconductor element; and a plastic jacket surrounding said insulating ring for tightly encasing said semiconductor element wherein the improvement comprises

first and second annular sheet metal strips each having an inner edge region fastened to an outer surface of a corresponding cylindrical metal body and a corrugated chemically roughened outer edge region embedded in said plastic jacket; and

a powder coating on said chemically roughened outer edge regions, whereby a reliable bond is obtained between said plastic jacket and said metal strips to obtain a pressure and oil-tight housing for said semiconductor device.

4,240,100

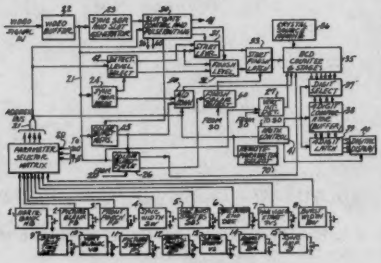
TELEVISION INTERVAL TIMER EMPLOYING DIGITAL TECHNIQUES

Jonathan M. Gorbold, Park Ridge, and David H. Slim, Cresskill, both of N.J., assignors to Marconi Electronics, Inc., Northvale, N.J.

Filed Mar. 8, 1979, Ser. No. 18,457

Int. Cl.³ H04N 9/62

U.S. Cl. 358—10 **22 Claims**



1. Apparatus for measuring the time duration of parameters associated with a television signal, said parameters to be measured associated with a conventional television signal and having timing intervals which are predetermined according to standards associated with said television signal, comprising:

(a) means responsive to said television signal to provide a timing signal synchronized thereto and consisting of a predetermined number of equally spaced pulses indicative of a television line,

(b) selectable means operative to select any one of a given number of parameters to be measured,

(c) logic means responsive to said selectable means and said timing signal to generate a control signal containing a selected number of said pulses which are indicative of the timing interval of said parameter, within said television signal,

(d) reference means responsive to said selectable means and operative to provide a reference level for determining whether said television signal exhibits a level within predetermined limits for said parameter selected,

(e) counting means responsive to said reference means and said control signal for providing a count indicative of said timing interval of said parameter when said television signal exhibits said level within said predetermined limits,

(f) means coupled to said counting means for displaying said count whereby the timing interval associated with said parameter is displayed.

4,240,101
TELEVISION STANDARDS CONVERSION

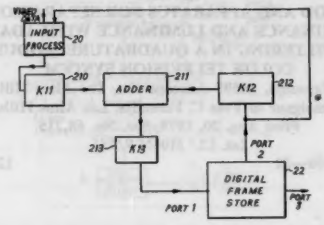
Peter C. Michael, Newbury; Richard J. Taylor, London, and Martin R. Trump, Newbury, all of England, assignors to Micro Consultants, Limited, Berkshire, England

Continuation-in-part of Ser. No. 841,519, Oct. 12, 1977, Pat. No. 4,163,249. This application Feb. 27, 1979, Ser. No. 15,699

Claims priority, application United Kingdom, Oct. 14, 1976, 42751/76; Jul. 26, 1977, 31355/77; Jul. 26, 1977, 31356/77; Jul. 26, 1977, 31357/77; Jul. 26, 1977, 31358/77; Jul. 29, 1977, 31996/77; Sep. 14, 1978, 36837/78; Sep. 14, 1978, 36838/78

Int. Cl.³ H04N 9/42

U.S. Cl. 358—11 31 Claims



1. A digital standards converter for video signals comprising:

processor means for synthesising picture points from adjacent picture point information derived from the video signals from at least one field;

video storage means for storing the information from at least one field; and

digital persistence means for effecting movement interpolation between incoming and stored information.

24. A converter according to claim 1 including means for generating a colour code to accompany the video data indicative of whether the video data contains chrominance or luminance information.

4,240,102
IDENTIFICATION SYSTEM FOR SECAM OR SECAM/PAL COLOR TELEVISION RECEIVERS

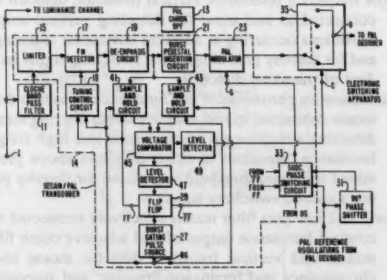
William H. Groeneweg, Ottenbach, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,942

Claims priority, application United Kingdom, Mar. 16, 1978, 10457/78

Int. Cl.³ H04N 9/50, 9/42

U.S. Cl. 358—11 2 Claims



1. In a color television receiver subject to reception of composite color television signals inclusive of a chrominance component enclosed in SECAM format; said SECAM-encoded chrominance component comprising, during image portions of alternate line intervals, a first subcarrier frequency modulated in accordance with a first color-difference signal, and during image portions of the intervening line intervals, a second subcarrier frequency modulated in accordance with a second color-difference signal, with a lead-in burst of oscillations at the center frequency of said first subcarrier preceding the image portion of each of said alternate line intervals, and with a lead-in burst of oscillations at the center frequency of said second subcarrier preceding the image portion of each of said intervening line intervals; apparatus comprising:

an FM detector, responsive to the received signals, and subject to operation in either a first mode with center frequency tuning corresponding to the center frequency of said first subcarrier, or a second mode with center frequency tuning corresponding to the center frequency of said second subcarrier;

a triggered flip-flop circuit for providing, when enabled, a pair of half line rate wave outputs of mutually opposite phase;

a source of line rate pulses timed to substantially coincide with the periods of appearance of said lead-in bursts;

means, responsive to said line rate pulses and to one of said pair of half line rate wave outputs, for controlling the operating mode of said FM detector such that said FM detector operates in respectively different ones of said modes during the image portions of successive line intervals but operates in only said first mode during each period of lead-in burst appearance;

first sampling means, coupled to receive an output of said FM detector, and responsive to said line rate pulses and to said one of said pair of half line rate wave outputs, for sampling the output of said FM detector only during alternate ones of said periods of appearance of lead-in bursts;

second sampling means, coupled to receive said output of said FM detector, and responsive to said line rate pulses and to the other of said pair of half line rate wave outputs, for sampling the output of said FM detector only during the intervening ones of said periods of appearance of said lead-in bursts;

means for comparing the output levels of said first and second sampling means; and

means, responsive to an output of said comparing means, for disabling said flip-flop circuit only when the output level of a given one of said sampling means significantly exceeds the output level of the other of said sampling means.

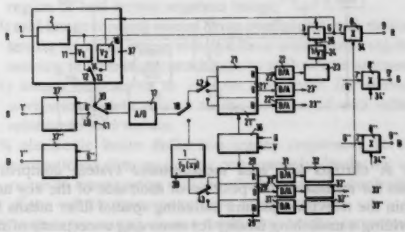
4,240,103
METHOD FOR THE ADDITIVE AND MULTIPLICATIVE SPURIOUS SIGNAL COMPENSATION

Dieter Poetsch, Ober Ramstadt, and Werner Becker, Mainz, both of Fed. Rep. of Germany, assignors to Robert GmbH Bosch, Stuttgart, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,257

Int. Cl.³ H04N 9/535, 5/34

U.S. Cl. 358—21 R 8 Claims



5. Apparatus for compensating for spurious signals in a video signal comprising a subtraction stage (4) having a first input (3) to which is applied a video signal to be corrected and a second

input (26), means for deriving a first signal from the black level of the video signal, a first store (21) having an input for receiving the first signal and having an output connected to the second input (26) of the subtraction stage (4), the store (21) also having control inputs connected to outputs from counting means (36) for synchronising the read-out of the signals in the store (21) with the video signal, a multiplication stage (8) having a first input (7) connected to an output (6) from the subtraction stage (4), a reciprocal value stage (28) having an input connected to the output (6) from the subtraction stage (4), means for deriving a second signal from the white level of the video signal, and a second store (29) for storing the second signal, and having an input to which is connected to the output from the reciprocal value stage (28) and control inputs connected to outputs from counting means (36), the second stage (29) further having an output connected to a second input (34) of the multiplication stage (8), a corrected video signal being extracted from an output (9) of the multiplication stage.

8. A circuit according to claim 5 for spurious signal compensation in more than one video signal channel, wherein a plurality of first (21, 21', 21") and second stores (29, 29', 29"), D/A converters (22, 22', 22" or 31, 31', 31"), amplifiers (11, 11', 11", 16, 16', 16") and attenuators (24, 24', 24", 33, 33', 33") are provided corresponding in number to the number of video signal channels (R,G,B), and wherein a single A/D converter (17) is provided between the amplifiers (11, 11', 11", 16, 16', 61") and the stores (21, 21', 21", 29, 29', 29"), an output from which converter is connected to a third changeover switch (38) for the various video signal channels (R,G,B), said third switch (38) having an output connected to the first changeover switch (18), and a single reciprocal value stage (28) is provided between the first changeover switch (18) and the stores (29, 29', 29") for the correction of multiplicative spurious signals, a fourth changeover switch (43) being connected between an output from the reciprocal value stage (18) and inputs to the stores (29, 29', 29") and the first changeover switch (18) being also connected directly through a fifth changeover switch (42) to the stores (21, 21', 21") for the correction of additive spurious signals.

4,240,104
MEASUREMENT OF CHROMA KEY AREA IN TELEVISION SYSTEMS

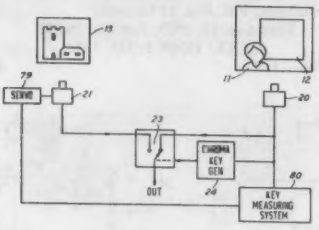
Richard J. Taylor, London, and Paul R. N. Kellar, Newbury, both of England, assignors to Quantel Limited, Berkshire, England

Filed Jan. 22, 1979, Ser. No. 5,533

Claims priority, application United Kingdom, Jan. 30, 1978, 3702/78

Int. Cl.³ H04N 9/535

U.S. Cl. 358—22 **17 Claims**



1. A chroma key area measurement system comprising means for measuring the position of each side of the key area within the television picture including spacial filter means for providing a smoothing facility for removing uncertainty of size or position if the key area is degraded and means responsive to the first mentioned means for measuring the position of the top and bottom of the key area within the television picture to determine the size and position of the incoming chroma key area whereby the system output is indicative of the key area size and position.

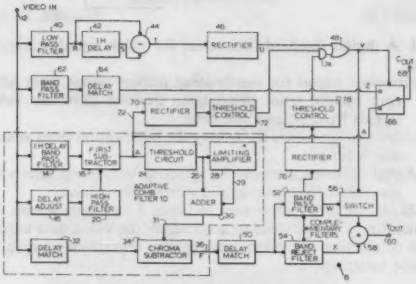
4,240,105
METHOD AND APPARATUS FOR SEPARATION OF CHROMINANCE AND LUMINANCE WITH ADAPTIVE COMB FILTERING IN A QUADRATURE MODULATED COLOR TELEVISION SYSTEM

Yves C. Faroudja, 26595 Anacapa Dr., Los Altos Hills, Calif. 94022, assignor to Yves C. Faroudja, Los Altos Hills, Calif.

Filed Aug. 20, 1979, Ser. No. 68,215

Int. Cl.³ H04N 9/535

U.S. Cl. 358—31 **12 Claims**



1. An improved system for separation of chrominance and luminance information in a quadrature modulated color television signal and similar periodically recurrent analog signals having interleaved, e.g., chrominance and luminance sidebands, said system comprising:

an input;

an output;

comb filtering means connected to said input for selectively separating chrominance and luminance components from said signal and for providing a combed chrominance output and a combed luminance output;

low frequency luminance vertical transition detector means connected to said input for detecting vertical amplitude transitions occurring at adjacent horizontal scanning lines and for thereby providing a first switching signal independent of transition direction;

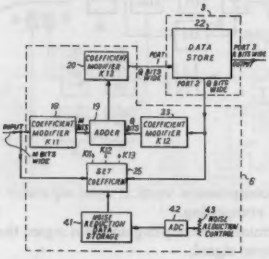
simultaneous chrominance and luminance transition detector means connected to said adaptive comb filtering means for detecting simultaneous chrominance and high frequency luminance transitions in either direction above predetermined minimum threshold values and for thereby providing a second switching signal;

switched low pass filter means selectively connected to said combed luminance output of said adaptive comb filtering means, said vertical transition detector means and said chrominance and luminance detector, and responsive to one or both of said first or second switching signals, for providing at said output chrominance frequency band band-reject filtered luminance in lieu of combed luminance during an interval corresponding to one or both of said switching signals.

4,240,106
VIDEO NOISE REDUCTION

Peter C. Michael, Newbury; Richard J. Taylor, London, and Martin R. Trump, Newbury, all of England, assignors to Micro Consultants, Limited, Berkshire, England

Continuation-in-part of Ser. No. 841,519, Oct. 12, 1977, Pat. No. 4,163,249. This application Feb. 27, 1979, Ser. No. 15,989
Claims priority, application United Kingdom, Oct. 14, 1976, 42751/76; Jul. 26, 1977, 31356/77; Jul. 26, 1977, 31357/77; Jul. 26, 1977, 31358/77; Sep. 14, 1978, 36838/78
Int. Cl.[3] H04N 9/535
U.S. Cl. 358—36 31 Claims



1. A video noise reduction system for incoming video information derived from a plurality of picture points, said system comprising:

coefficient modifier means for modifying at least a portion of the incoming picture point information;

video storage means for storing the modified picture point information;

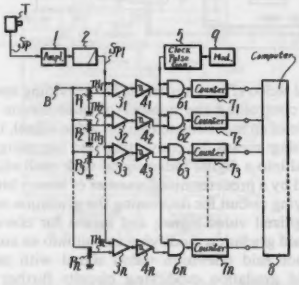
adder means for adding at least a portion of the stored picture point information to at least a portion of corresponding picture point information from an incoming field to provide noise reduced picture point information at the store output; and

control means for adjusting the degree of modification effected by the coefficient modifier means in dependence on whether luminance or chrominance components are present when picture movement is occuring.

4,240,107
APPARATUS AND METHOD FOR PATTERN INFORMATION PROCESSING

Hajime Yoshida, Chofu, Japan, assignor to Hajime Industries, Ltd., Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,494
Int. Cl.[3] H04N 7/18
U.S. Cl. 358—93 4 Claims



1. A pattern information processing method comprising the steps of:

(a) picking up an object by scanning with an image sensor to produce a video signal corresponding to said object;

(b) dividing said video signal by a plurality of threshold levels which are different from one another;

(c) gating clock pulse trains with said divided video signals to produce clock pulse trains corresponding to said plurality of threshold levels;

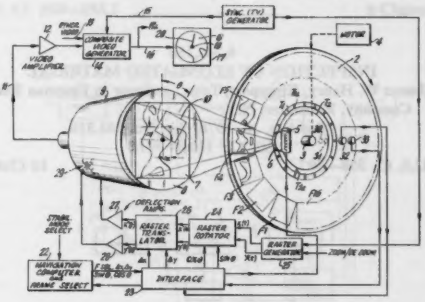
(d) counting said clock pulse trains to provide a number series which represents a pattern of said scanned object; and

(e) modulating said clock pulse train during said scanning whereby a number of said clock pulses counted in at least two different equal portions of said video signal differ from each other.

4,240,108
VEHICLE CONTROLLED RASTER DISPLAY SYSTEM

Paul M. Levy, Dix Hills, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,807
Int. Cl.[2] H04N 7/00
U.S. Cl. 358—103 10 Claims



1. A map display system particularly adapted for airborne use in confined locations for displaying location of an airborne vehicle relative to the terrain comprising:

(1) means forming an image of the segment of said terrain contiguous to the position of said vehicle;

(2) means for generating a raster for scanning a selected region of said terrain segment image;

(3) said image forming means being configured such that said terrain segment image remains fixed while said vehicle is moving in a contiguous relation to said terrain segment;

(4) means responsive to vehicle movement for deriving navigational data related to the position of said vehicle relative to said terrain;

(5) electronic beam deflection means responsive to said navigational data means for continuously displacing said raster to traverse the regions of said image in duplication of the vehicle traverse relative to said terrain;

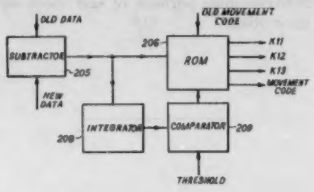
(6) video generating means responsive to the raster-image interface for converting said region of said terrain segment image into video segments; and

(7) display means responsive to said video signals.

4,240,109
VIDEO MOVEMENT DETECTION

Peter C. Michael, Newbury; Richard J. Taylor, London, and Martin R. Trump, Newbury, all of England, assignors to Micro Consultants, Limited, Berkshire, England

Continuation-in-part of Ser. No. 841,519, Oct. 12, 1977, Pat. No. 4,163,249. This application Feb. 27, 1979, Ser. No. 15,700
Claims priority, application United Kingdom, Oct. 14, 1976, 42751/76; Jul. 26, 1977, 31355/77; Jul. 26, 1977, 31356/77; Jul. 26, 1977, 31357/77; Sep. 14, 1978, 36838/78
Int. Cl.³ H04N 7/18
U.S. Cl. 358—105 **23 Claims**

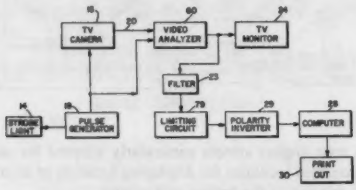


1. A movement detector for detecting picture point movement in video data in the presence of noise comprising: input means for measuring the difference between incoming data from a selected number of picture points on one field with data from a selected number of corresponding picture points from a previous field adjacent the picture point for which movement is to be determined, and output means for providing a control signal in dependence on the measured difference between the selected picture points from said input means.

4,240,110
INSPECTION OF ELONGATED MATERIAL

James W. Henry, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,510
Int. Cl.³ H04N 7/18
U.S. Cl. 358—107 **10 Claims**

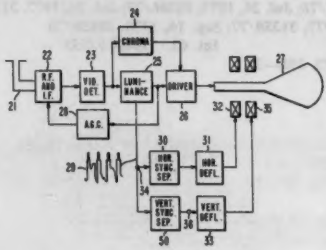


1. Apparatus for determining information relative to surface irregularities in elongated material comprising
(A) a television camera positioned such that its field of view is a portion of the elongated material,
(B) light means positioned adjacent the path of said elongated material such as to illuminate said elongated material at an angle to cause a pattern of light and shadowed areas,
(C) means synchronizing said television camera and light means such that a television frame is initiated during an illumination, and a video signal is formed of the illuminated material,
(D) means for filtering low frequency signal components from the composite video signal caused by different illumination intensities on relatively large areas of said elongated material, and
(E) means for using the digitized signal as a source of information in the inspection of said elongated material.

4,240,111
VERTICAL SYNC SEPARATOR

William H. Meise, Wrightstown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 4, 1979, Ser. No. 26,814
Int. Cl.³ H04N 5/10
U.S. Cl. 358—154 **20 Claims**

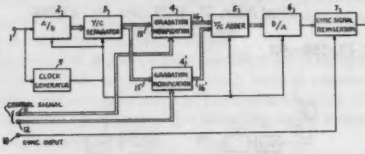


1. A pulse compression vertical sync separator for a television receiver, comprising:
an input terminal for coupling an input signal that includes a vertical sync signal;
a delay line coupled to said input terminal for storing successive portions of said input signal, the capacity of said delay line sufficient to store a uniquely profiled portion of said vertical sync signal;
sampling means coupled to said delay line for sampling the values of said successive portions;
pulse compression means coupled to said sampling means and responsive to the sampled values for forming a compressed pulse upon the occurrence of said vertical sync signal; and
output means coupled to said pulse compression means for forming an output signal in response to said compressed pulse.

4,240,112
DIGITAL VIDEO EFFECT EQUIPMENT

Masao Inaba; Atsumi Sugimoto, and Shigeru Miyahara, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1979, Ser. No. 27,592
Claims priority, application Japan, Apr. 5, 1978, 53-40749
Int. Cl.³ H04N 5/14, 9/535
U.S. Cl. 358—160 **4 Claims**

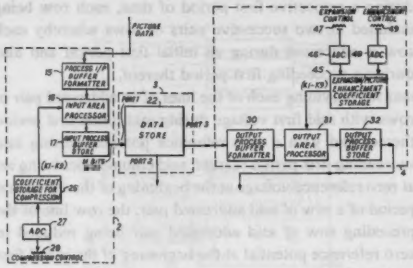


1. Digital video effects apparatus for providing special video effects by controlling the number of quantization levels for each sample of an incoming television video signal, the apparatus comprising: means for converting said incoming television video signal into a digital video signal with each video sample represented by a predetermined number of binary bits; a gradation modifying circuit for decreasing the gradation represented by said digitized video signal; and means for converting the output of said gradation modifying circuit into an analog signal to reproduce said television video signal with said special effects, said gradation modifying circuits further including means for changing the (N+1)th bit, counted from the MSB of said digital video signal, to a logical "1" level and the (N+2)th bit and all less significant bits to a logical "0" level.

4,240,113
PICTURE MANIPULATION IN VIDEO SYSTEMS

Peter C. Michael, Newbury; Richard J. Taylor, London, and Martin R. Trump, Newbury, all of England, assignors to Micro Consultants, Limited, Berkshire, England

Continuation-in-part of Ser. No. 841,519, Oct. 12, 1977, Pat. No. 4,163,249. This application Feb. 27, 1979, Ser. No. 15,676
Claims priority, application United Kingdom, Oct. 14, 1976, 42751/76; Jul. 26, 1977, 31355/77; Jul. 26, 1977, 31356/77; Sep. 14, 1978, 36839/78
Int. Cl.[3] H04N 3/22
U.S. Cl. 358—180 27 Claims



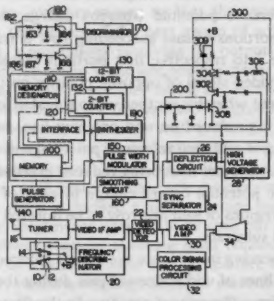
1. A video system for manipulating picture information in the form of a plurality of picture points comprising adaptive processing means for receiving a number of picture points from more than one field to provide a synthesised picture point from information on a number of existing picture points adjacent said synthesised picture point and from more than one field; and

selector means for determining the portions of information used from the picture points from each field in dependence on picture movement therebetween.

4,240,114
CHANNEL SELECTION SYSTEM FOR TELEVISION RECEIVER

Kiyoshi Fushimi, and Keizo Shimizu, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 23, 1978, Ser. No. 918,450
Claims priority, application Japan, Jun. 27, 1977, 52-75539
Int. Cl.[3] H04N 5/44
U.S. Cl. 358—193.1 10 Claims



1. In a channel selection system for a television received comprising:

a tuner operatively tuned to an active station for receiving a television broadcasting signal of said tuned active station and for converting said received television broadcasting signal to a video intermediate frequency signal;

band scan means for causing said tuner to search for an active station over a predetermined television frequency band;

a voltage generator supplied with said video intermediate frequency signal for generating a voltage as a function of the frequency difference between said video intermediate frequency signal and a reference frequency; and

a sync separator for separating from said video intermediate frequency signal a sync pulse;

the improvement comprising:

a first detector connected to said voltage generator for generating a first detection signal when it detects a voltage change of said voltage from said maximum value to said minimum value, and vice versa;

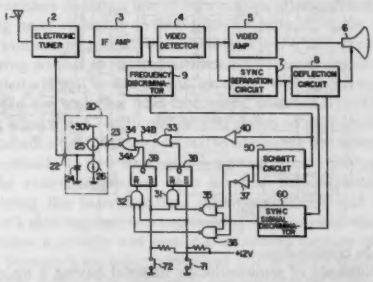
a second detector connected to said sync separator for generating a second detection signal when said sync pulse is generated in said sync separator; and

a stopping means for stopping scanning a receiving frequency of said tuner and holding said receiving frequency of said tuner at the frequency said band scan means stops scanning, when all of said first and second detection signals are supplied thereto.

4,240,115
CHANNEL SELECTION VOLTAGE GENERATOR

Masanori Kamiya, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Dec. 11, 1978, Ser. No. 968,260
Claims priority, application Japan, Jul. 26, 1978, 53-90476
Int. Cl.[3] H03J 7/26; H04B 1/26
U.S. Cl. 358—193.1 8 Claims



1. A channel selection voltage generator for an electronic tuner having a receiving frequency and a tuning frequency, comprising:

a frequency discriminator connectable to said electronic tuner for producing a discrimination signal, said discrimination signal having a magnitude which is at a center value when said tuning frequency and said receiving frequency are in a predetermined relationship and changes between an upper limit and a lower limit in accordance with a frequency deviation from said relationship as said tuning frequency deviates from said receiving frequency;

a sweep voltage generator including a capacitor for producing a control voltage to be supplied to said tuner for control of said tuning frequency, a first constant current source for supplying a first constant current to said capacitor to perform with respect to said capacitor one operation selected from (a) charging said capacitor and (b) discharging said capacitor, to change the voltage across said capacitor in one of (c) increasing voltage direction and (d) decreasing voltage direction, and a second constant current source for supplying a second constant current higher than said first constant current to said capaci-

tor to change the voltage across said capacitor in the other direction selected from (c) and (d); and

a control means connected between said second constant current source and said frequency discriminator for maintaining said second constant current source in one state selected from (e) an operative state and (f) an inoperative state so that said discrimination signal decreases when said discrimination signal is higher than said center value of said discrimination signal and maintaining said second constant current source in the other state selected from (e) and (f) so that said discrimination signal increases when said discrimination signal is lower than said center value, and

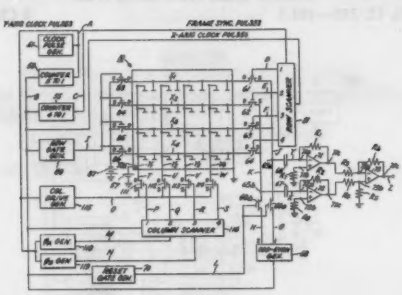
wherein said control means includes a holding means for maintaining said second constant current source in any one of (e) said operative state and (f) said inoperative state to change the voltage across said capacitor irrespective of said discrimination signal from said frequency discriminator, and a release means for releasing said holding means to cause said second constant current source to assume one of (e) said operative state and (f) said inoperative state in response to said discrimination signal when said discrimination signal reaches one of said upper limit and said lower limit as the voltage across said capacitor changes.

4,240,116

SOLID STATE IMAGING APPARATUS

Harold W. Tomlinson, Jr., Milford, Conn., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 22, 1979, Ser. No. 68,631
Int. Cl.³ H01J *39/12*; H04N *3/14*
U.S. Cl. 358—213 **1 Claim**



1. In combination,

a substrate of semiconductor material having a major surface,

a plurality of first conductive plates, each overlying and in insulated relationship to said major surface and forming a first conductor-insulator-semiconductor capacitor with said substrate,

a plurality of second conductive plates, each adjacent a respective first conductive plate to form a plurality of pairs of plates, said pairs of plates being arranged in a matrix of rows and columns, each of said second conductive plates overlying and in insulated relationship to said major surface and forming a second conductor-insulator-semiconductor capacitor with said substrate, each coupled to a respective first conductor-insulator-semiconductor capacitor,

a plurality of row conductor lines, the first conductive plates in each of said rows connected to a respective row conductor line,

a plurality of column conductor lines, the second conductive plates in each of said columns connected to a respective column conductor line,

a first voltage means for providing a first voltage between said row conductor lines and said substrate to deplete the first portions of said substrate lying under said first conductive plate of majority charge carriers and provide an absolute potential of a first value therein,

a second voltage means for providing a second voltage between said column conductor lines and said substrate to deplete the second portions of said substrate lying under said second conductive plate of majority carriers and providing an absolute potential of a second value therein, said second value being greater than said first value,

means for storing charge in said first and second portions of said substrate,

means for addressing each pair of adjacent rows in sequence during a respective first period of time, each row being included in two successive pairs of rows whereby each row is addressed during an initial first period and also during a succeeding first period thereof,

means for providing each of the lines of an addressed pair of rows with said first voltage during said initial first period thereof and with a zero reference potential during said succeeding first period thereof, said column lines being set at zero reference voltage at the beginning of the initial first period of a row of said addressed pair, the row line of the preceding row of said addressed pair being reduced to zero reference potential at the beginning of the initial first period of said one row causes charge in the first storage regions of said preceding row to be injected simultaneously into said substrate,

means for increasing said second voltage on each of said column conductor lines in sequence during said initial first period of said one row when the row line thereof is at said first voltage and the preceding row line of said pair is at zero reference potential to deplete a respective pair of second portions of said substrate lying thereunder of majority charge carriers to provide an absolute potential in said second portions of said second value therein whereby charge stored in said first portions of said row of said addressed pair of rows is transferred in sequence into respective second portions thereof and produces a video signal of one polarity on the row line thereof and whereby another video signal of said one polarity is produced on the preceding row line of said addressed pair,

means for decreasing said second voltage on each of said column conductor lines in sequence during an initial first period of a succeeding row of a succeeding addressed pair of rows to zero reference potential when the row line thereof is at said first voltage and said one row line is at zero reference potential whereby charge stored in the second portions of said succeeding row is transferred in sequence into respective first portions thereof and produces a video signal of opposite polarity on the row line thereof and whereby another video signal of said opposite polarity is produced on said one row line, said one row line being at said zero reference potential and each of said column conductor lines being reduced in sequence to zero reference potential causes charge in each of the second storage regions of said one row to be injected in sequence into said substrate,

means for sensing in sequence the signals induced on each of the row lines of said addressed pair during the transfer of charge from the second portions to the first portions of said substrate associated therewith,

means for obtaining a difference signal for each pair of signals appearing on the row lines of said addressed pair of rows.

4,240,117

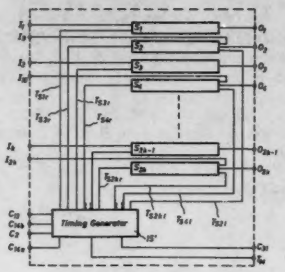
APPARATUS FOR ELECTRO-OPTICALLY RECORDING PICTORIAL INFORMATION FOR A FACSIMILE TRANSMISSION SYSTEM

Klaus Wellendorf, Kitzeberg, and Ruediger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Division of Ser. No. 803,143, Jun. 3, 1977, which is a continuation-in-part of Ser. No. 679,087, Apr. 21, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,913

Int. Cl.³ H04N *1/204, 1/10, 1/40*

U.S. Cl. 358—296 1 Claim



1. A facsimile system, comprising a transmitter for a picture, a scanning head, means to generate a lateral back and forth scanning motion between said scanning head and said picture and means to generate a step-by-step crossfeed motion of said scanning head relative to said picture for moving it one step after each scanning pass of said scanning head 90 degrees to the direction of said scanning motion, said scanning head comprising a plurality of photo-electronic sensing means for sensing said picture, said sensing means being arranged in a row 90 degrees to the direction of said scanning motion, whereby each element of said row reads one single picture line of a plurality of adjacent parallel picture lines covered with each pass of said scanning motion, the output signals of said row of sensing means supplied to a first group of random access memory means corresponding to the number of sensing means in which one single picture line is stored in each of said memory means and after one pass of said scanning head a second group of memory means is supplied with the signals of adjacent single picture lines during the next pass and after said scanning head has made one crossfeed step, a switch for switching the outputs of said sensing means between said first and second group of random access memory means so that the second group is loaded with the signals of the next group of adjacent single picture lines, a multiplexer receiving the outputs of said first group of memory means while said sensing means is connected to said second group of memory means and said multiplexer is alternately switched to the first and second groups of memory means by a counter, a receiver with a demultiplexer which receives input signals from said multiplexer, a third group of random access memory means receiving signals from said demultiplexer such that in each single memory means of said third group there is formed a single picture line, said third group of memory means adapted to be read out in parallel, a receiver multiple element scanning head connectible to said third group of memory means and the picture line-signal of each memory means activating one single recording element of said scanning head, a fourth group of random memory means in the receiver for storing the signals of the adjacent picture lines of the next pass for recording adjacent lines receiving the output of said demultiplexer and alternately connected to said receiver multi-element scanning head.

4,240,118

METHOD FOR ELECTRO-OPTICALLY SENSING, TRANSMITTING PICTORIAL INFORMATION

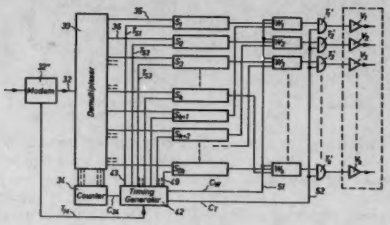
Klaus Wellendorf, Kitzeberg, and Ruediger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Division of Ser. No. 803,143, Jun. 3, 1977, which is a continuation-in-part of Ser. No. 679,087, Apr. 21, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,765

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1975, 2518370

Int. Cl.³ H04N *1/24, 1/10, 1/40*

U.S. Cl. 358—296 1 Claim



1. The method of electro-optically scanning and transmitting and recording picture patterns comprising the steps of, (1) scanning said pattern with a scanning head by aligning a scanning head with k multiple sensing elements for sensing, (2) sequentially distributing for storing to a first group of shift registers the signals from said k multiple sensing elements so that individual lines are sequentially stored in different shift registers, (3) advancing said scanning head one space horizontally, (4) repeating steps 2 and 3 until each of the first group of k shift registers contain a line of information, (5) advancing the scanning head vertically to new lines, (6) advancing the outputs of said scanning head to a second group of k shift registers for storing so that as individual lines are scanned signals are sequentially stored in the second group of shift registers, (7) advancing the scanning head one space horizontally, (8) repeating steps 6 and 7 until said second group of shift registers each contain a line of information, (9) advancing the scanning head vertically to new lines, (10) repeating steps 1 through 9 until the entire pattern has been scanned, (11) sequentially transmitting the individual line information from said first group of k shift registers to a transmitting means so that the line information is serially sent over a transmitting medium while steps 6 through 9 are being performed, (12) sequentially transmitting by shifting the individual line information from said second group of k shift registers to a transmitting means so that line information is serially transmitted through a transmitting medium while steps 1–5 are being performed, (13) receiving from the transmitting medium signals representative of k lines of incomimg series information and sequentially recording by storing the signals line by line in a stored group of k shift registers until k lines are stored, (14) connecting incoming received series line information to a fourth group of k shift registers until k lines are stored, (15) while step 14 is being performed connecting said third group of k shift registers to a writing head having k writing elements for simultaneously recording k lines of information stored in said third group of k shift registers as the k element writing heads are shifted laterally across a recording meium (16) shifting the k element writing head vertically relative to the medium (17) while step 13 is being performed connecting said fourth group of k shift registers to the k element writing head for simultaneously recording k lines of information stored in said fourth group of k shift registers as the k element writing head are shifted laterally across the recording medium, and (18) repeating steps 1–5 until all transmitted information has been recorded.

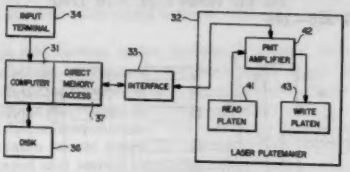
4,240,119
COMPUTERIZED LASER ENGRAVING SYSTEM AND METHOD

Lyle K. Norton, Costa Mesa; Robert J. Prichard, Anaheim, and Margit K. Ochi, Newport Beach, all of Calif., assignors to EOCOM Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 892,485, Mar. 31, 1978, abandoned. This application Jun. 5, 1978, Ser. No. 912,505

Int. Cl.³ G03F *7/02*; G06F *3/12*

U.S. Cl. 358—297 **8 Claims**



1. In a method for imaging data on a surface scanned by a writing beam, the steps of: scanning copy with a reading beam to form a read data signal representative of the copy, storing the read data signal in a compressed format in the memory of a computer, inputting additional data through the computer and storing a signal representative thereof in the compressed format in the computer memory, decompressing selected portions of the stored signals to provide signals representative of read beam data and computer input data to be imaged together on the writing surface, and modulating the writing beam with the decompressed signal to form an image of the selected read beam data and the selected computer input data on the writing surface.

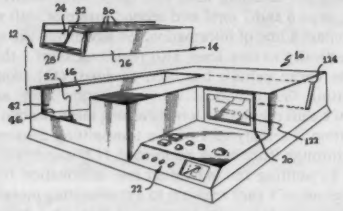
4,240,120
CASSETTE-TO-CASSETTE DUPLICATOR

Murray N. Padwa, 18710 Canasta St., Tarzana, Calif. 91356

Filed Jan. 18, 1979, Ser. No. 4,461

Int. Cl.³ G11B *5/86, 15/68*

U.S. Cl. 360—15 **22 Claims**



1. A cassette-to-cassette duplicator comprising:

a base;

a magazine assembly mounted on said base, said magazine assembly being for the sequential feeding of duplicate cassettes, each including magnetic tape, for the sequential recording of information on the magnetic tapes therein;

a changer assembly mounted on said base and positioned to receive cassettes from said magazine assembly, said changer assembly having means thereon for moving duplicate cassettes from a cassette receiving position to a cassette recording position; and

a tape transport, said tape transport including a cassette carriage into which a duplicate cassette is delivered by said changer assembly, said tape transport having a tape recording position into which said cassette carriage delivers a duplicate cassette, said tape transport also having a separate cassette playback position at which a master cassette can be played back, said tape transport having drive means for driving both the master cassette and the duplicate cassette delivered by said cassette carriage so that information pre-recorded on said master cassette can be recorded onto said duplicate cassette;

said magazine assembly comprising a magazine receiver mounted on said base and a magazine detachably mounted therein, said magazine being for containing a plurality of magnetic tape-containing duplicate cassettes for delivering them sequentially to said changer assembly, said magazine being mounted at an acute angle relative to the horizontal so said duplicate cassettes are urged by gravity toward said changer assembly at a force determined by said angle.

4,240,121
BROADBAND MAGNETIC TAPE TRANSDUCER HEAD

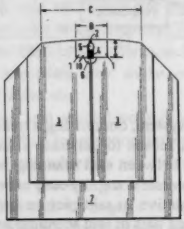
Rudolf Prochnow, Darmstadt-Eberstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 18, 1979, Ser. No. 4,382

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804380

Int. Cl.³ G11B *5/22, 5/20*

U.S. Cl. 360—122 **4 Claims**



1. Broadband magnetic tape transducer head adapted to have a magnetic tape pass over a head surface thereof to transduce signals of various frequencies comprising

a pair of pole pieces (1, 1) of magnetically active homogeneous material to conduct magnetic flux therein, separated by a gap (2), the extend (B) of the pole pieces, in the direction of relative movement between the head and the tape being at least three times as long as the wave length of the lowest frequency signal to be transduced,

tape support elements (3) of wear-resistant, non-magnetic material located adjacent the pole pieces (1) to form an extended support surface with the pole pieces for tape engaging said head,

a yoke (10) connecting said pole pieces , said yoke having a minimum cross section (E) which is small with respect to the minimum cross section (D) of the pole pieces;

and a single winding (4) closely wound about said yoke (10).

4,240,122
PROTECTIVE DEVICE

John E. Smith, Cambridge, Ohio, assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 26, 1979, Ser. No. 23,960

Int. Cl.³ H02H *7/04*; H01H *85/02*

U.S. Cl. 361—41 **8 Claims**

1. A protective device comprising:

a support affixed to the outer wall of an enclosure and extending therein;

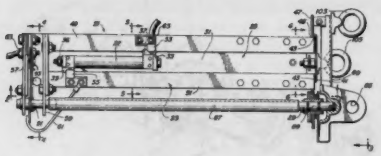
a removable fuse holder movably mounted on said support and bearing a fuse which may be replaced, said fuse holder being removable from the enclosure without generally exposing the interior of said enclosure;

stationary contacts mounted on said support to be engaged

by movable contacts on said fuse holder when said fuse holder is fully inserted;

a load switch affixed to said support to break the conductive path to said stationary contacts, thus ensuring that said fuse holder does not function as a switch when said fuse holder is inserted into or removed from the enclosure;

a load switch actuator for opening and closing said load



switch, said load switch actuator mounted on said support and extending to a point outside the enclosure; and

a handle for said load switch actuator mounted on the end of said load switch actuator outside the enclosure, a lock portion of said handle adapted to engage said fuse holder when said load switch is closed to provide an interlock to prevent insertion or removal of said fuse holder unless said load switch is open.

4,240,123

POWER BREAKER SYSTEM

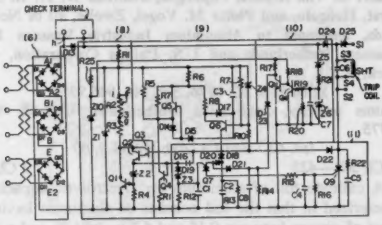
Shigenori Hotta, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,729

Claims priority, application Japan, Aug. 8, 1978, 53-108725[U]

Int. Cl.³ H02H *3/093*

U.S. Cl. 361—96 **5 Claims**



1. In a power breaker system comprising a main breaker connected to a power source; a plurality of feeder circuit breakers connected between said main breaker and each of plural loads so as to break selectively only the feeder circuit breaker in a fault circuit when a load short-circuit is caused, an improvement which comprises a long-timing breaking delay circuit and a short-timing breaking delay circuit for delaying the total circuit breaking time by a trip mechanism of said main breaker and a current limiting device for limiting a fault current below a predetermined level, said short-timing breaking delay circuit being comprised of a Zener diode and a transistor both of which are in the on-state when a fault current passing through said main breaker increases over a predetermined level, said short-timing breaking delay circuit further including a capacitor that is charged by the output from said transistor to provide an actuating signal to said trip mechanism; said long-timing breaking delay circuit being comprised of a Zener diode, first and second switching means and a capacitor, said first switch means being operable and said second switch means being inoperable when a normal current is passed through said main breaker, said first switch means being inoperable and said second switch means being operable when a fault current passing through said main breaker decreases under a predetermined level; said capacitor of said long-timing breaking delay circuit being charged by an output from said second switch means to provide an actuating signal to said trip mechanism.

4,240,124

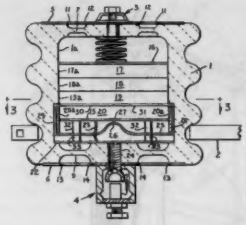
SURGE ARRESTER HAVING COAXIAL SHUNT GAP

Arthur C. Westrom, Stone Mountain, Ga., assignor to Kearney-National Inc., Atlanta, Ga.

Filed Jun. 1, 1979, Ser. No. 44,559

Int. Cl.³ H02H *3/22, 9/04*

U.S. Cl. 361—127 **9 Claims**



1. An electric surge arrester comprising a housing, a plurality of stacked varistor blocks in said housing, a pair of terminals extending through apertures formed in said housing and respectively connected to the end ones of said stacked varistor blocks, an electrode disposed in spaced coaxial alignment with said stacked blocks and interposed between one of said terminals and the adjacent one of said varistor blocks to establish a gap between said electrode and the adjacent part of said adjacent one of said varistor blocks, and shunt means interconnected with said electrode and with a part of said adjacent block remote from said electrode so as to provide a by-pass shunt circuit around said adjacent varistor block in coordination with the development of an overvoltage surge condition and the establishment of an arc across said gap.

4,240,125

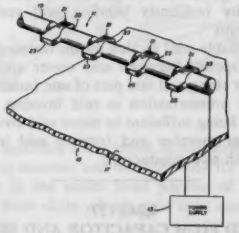
CORONA GENERATING ELEMENT

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corp., Bedford, Mass.

Continuation-in-part of Ser. No. 898,730, Apr. 24, 1978, abandoned. This application Apr. 11, 1979, Ser. No. 28,641

Int. Cl.³ H01T *19/04*

U.S. Cl. 361—230 **30 Claims**



1. A corona generating element for use in applying a uniform electrostatic charge to the surface of a photoconductive member comprising a strand of metal wire having a plurality of identical thin portions along its length, the thickness of the thin portions being less than the thickness of the body of the wire, the thin portions being located at closely spaced intervals, each thin portion terminating in at least one edge constituting a corona emission surface, whereby, when a source of high voltage is connected to the corona generating element a corona will be generated along the edge of the thin portions and

a substantially uniform corona will be generated along the length of the metal wire.

4,240,126

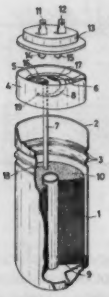
ELECTRIC CAPACITOR CONSTRUCTED TO PREVENT EXPLOSION

Enrico Sanvito, Monza, Italy, assignor to ICAR Industria Condensatori Applicazioni Elettroelettroniche S.p.A., Milan, Italy

Filed Feb. 16, 1979, Ser. No. 12,815

Int. Cl.³ H01G *1/11*

U.S. Cl. 361—274 **6 Claims**



1. An electrical capacitor comprising:

a generally cup-shaped casing;

a plurality of capacitor plates having dielectric material therebetween disposed in said casing, said plates forming a plate assembly having opposite ends;

an annular member disposed in said casing above said capacitor plate plate assembly and having a peripheral wall which abuts the casing along the peripheral length of said wall;

first and second resilient support members projecting generally radially inward from said peripheral wall of said annular member, said members being resiliently moveable toward said capacitor plate assembly;

first and second conductors supported by said first and second support members, respectively, in contact with respective ends of said capacitor plate assembly;

a cover closing the upper end of said housing above said annular member;

first and second terminals supported by said cover in pressure contact with said first and second conductors, respectively, to urge the conductors toward the capacitor plate assembly by resiliently bending said resilient support members; and

axially deformable wall section means forming a part of said housing disposed between said cover and said annular member for elongated said part of said housing in response to internal pressurization in said housing, the resulting elongation being sufficient to move said cover away from said annular member and remove said terminals from contact with said conductors.

4,240,127

METALLIZED FILM CAPACITOR AND METHOD OF MANUFACTURE

William J. Fanning, Glen Ellyn, and Otto T. Masopust, Jr., Cicero, both of Ill., assignors to Western Electric Company, Inc., New York, N.Y.

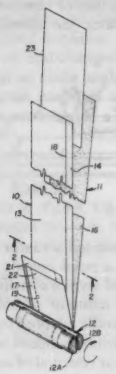
Filed Dec. 28, 1978, Ser. No. 974,182

Int. Cl.³ H01G *1/015*

U.S. Cl. 361—304 **28 Claims**

1. A rolled film capacitor blank, which comprises:

a pair of convoluted films, each having a metal coated surface engaging a non-metal coated surface of the other film; each of said films having a non-coated continuous linear area formed in and running along the length of each of the respective metallized surfaces wherein the continuous non-coated areas on each of the respective films are in overlaying positions on the core and peripheral convolutions and the continuous non-coated areas on each of the respective films extend to and run along opposed margins of the respective films for the remainder of the convolutions.



4,240,128

ALUMINUM CATHODE FOIL FOR ELECTROLYTIC CAPACITORS INCLUDING A COPPER CONTENT CONTENT

Leendert G. Van Alphen, Nijmegen; Justinus W. H. G. Slakhorst, Hengelo, and Pieter M. Vogel, Zwolle, all of Netherlands, assignors to Aluminium Industrie Vaassen B.V., Vaassen, Netherlands and U.S. Philips Corporation, New York, N.Y.

Filed Sep. 26, 1978, Ser. No. 945,935

Claims priority, application Netherlands, Oct. 3, 1977, 7710775

Int. Cl.³ B01J *17/00*; H01G *9/00*

U.S. Cl. 361—433 **7 Claims**

1. A cathode foil of aluminum for electrolytic capacitors, characterized in that the foil consists of aluminum having a content of copper between 0.15 and 5.7 weight % and a total of contaminations of not more than 2 weight % wherein said contaminations consist of less than 1.0 weight % of iron.

4,240,129

HOLDING DEVICE FOR ATTACHING A DEVICE SUCH AS A CAMERA BRACKET

Michio Kawazoe, 30-11 5 chome, Higashi, Narita Suginami ku, Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,474

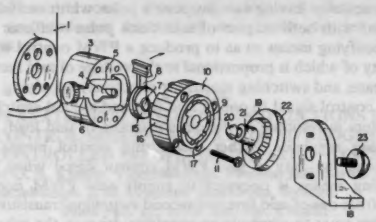
Claims priority, application Japan, Oct. 31, 1977, 52-147020[U]

Int. Cl.² G03B *15/02*

U.S. Cl. 362—3 **8 Claims**

1. A holding device for attaching a member such as a strobe grip to a camera bracket or the like which comprises a first retainer with an insertion hole in the center, a lock lever with a release hole and a locking slit which communicates with the release hole, a clamp lever with a central hole, and a second retainer with a central through-hole, and the first retainer, the lock lever, the clamp lever, and the second retainer, being arranged in the above order and the first retainer, the clamp lever, and the second retainer being secured to the member with screws, the lock lever being lengthwise controlled by a

locking spring which reacts against a force pushing lengthwise on the lock lever in the release operation and controlled axially by a compression spring which presses a part of the side of the clamp lever, opposed faces of the clamp lever and the second retainer having the shape of such an inclined cam that the clamp lever can be moved against the compression spring



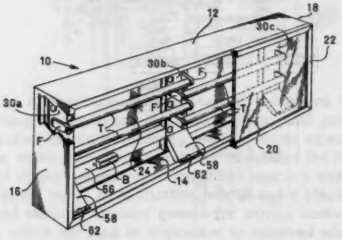
toward the member when turning the clamp lever in the tightening direction, the second retainer being engaged with a jack so as to hold the jack, the jack being engaged with the second retainer and a pin with a head in the center thereof which is engageable with the locking slit, a bracket being attached to the jack with a screw.

4,240,130

RACEWAY FOR SIGN BOX

Johann Stilling, Apt. A1001, 1141 Royal York Rd., Islington, Canada

Filed Mar. 13, 1978, Ser. No. 885,960
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—217 **13 Claims**



1. An electrical raceway for incorporation in a sign box to provide structural reinforcement to such sign box when incorporated therein so as to extend between spaced apart walls thereof, for the mounting of receptacles for elongated electrical lighting tubes in a plurality of different positions and for housing electrical conductors connected to such receptacles for the supply of electricity thereto and which raceway comprises;

an elongated channel having a base web with mutually spaced apart side walls projecting forwardly therefrom;

a front cover releasably secured on said channel;

side edge flanges adapted releasably to engage said side walls of said channel, and being adapted to be disposed within such a sign box between such spaced apart walls thereof with such electrical conductors disposed therewithin, and,

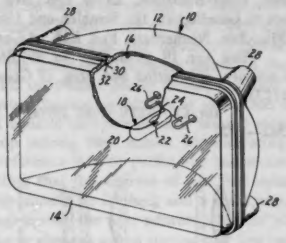
two mutually parallel series of electrical receptacle opening zones formed in said front cover, the zones of a first said series being adapted to have left-handed receptacles mounted therein and the zones of a second said series being adapted to have right handed receptacles mounted therein, said zones being arranged offset from one another so that elongated lighting tubes fitted in such receptacles mounted in said zone of said first said series extend across said zone of said second said series, and vice-versa.

4,240,131

SEALED LIGHTING ELEMENT ASSEMBLY

Donald E. Albrecht, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 14, 1979, Ser. No. 20,315
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **18 Claims**



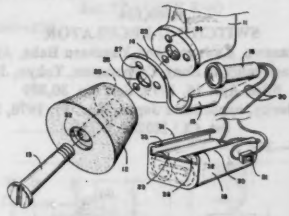
1. A sealed lighting element assembly comprising a housing and a cover therefor, at least a portion of said housing or said cover being light transmissive, said housing or said cover being adapted to support a lighting element within said assembly, said housing and said cover having cooperating portions which are joined with an actinic light cured sealant derived from an admixture of epoxy-containing material and vinyl terminated acrylonitrile-butadiene polymer.

4,240,132

ROLLER SKATE LIGHT ASSEMBLY

Bobbie L. Wickman, Thousand Oaks, Calif., assignor to Midnight Rollers Inc., Ventura, Calif.

Filed Dec. 10, 1979, Ser. No. 101,814
Int. Cl.³ F21L *15/08*; A63C *17/14*
U.S. Cl. 362—103 **4 Claims**



1. A light assembly for a roller skate having a skate frame with a toe stop member and threaded bolt for securing the toe stop member to the under front portion of the skate frame ahead of the front skate wheels, said light assembly including, in combination:

(a) an integral disc member having a radially outwardly extending strip portion twisted through a given angle and thence curved about an axis to define a concave shaped cradle;

(b) a lightbulb and reflector structure supported in a generally cylindrical body dimensioned to be received and secured in said cradle, said disc having a central opening so that it can be sandwiched between said toe stop and under front portion of said skate frame with said threaded bolt passing through said disc to thereby secure the disc to the skate frame, said given angle of twisting of said strip

portion being such that the axis of said cradle and cylindrical body supported therein is generally horizontal when said skate is level; and,

(c) battery means for energizing said light bulb to thereby provide a light for said roller skate which can be secured to and removed from said roller skate without having to make any alterations in the structure of said roller skate.

4,240,133

QUASIMONOCHROMATIC LIGHT SOURCE

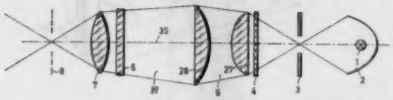
Diether Haina, Hähnlein; Willi Poth, Rossdorf, and Wilhelm Waidelich, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen-und Umweltforschung mbH, München, Neuherberg, Fed. Rep. of Germany

Filed Apr. 19, 1978, Ser. No. 897,865

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717233

Int. Cl.³ F21V *9/00, 29/00*

U.S. Cl. 362—293 **8 Claims**



1. In a light source producing an exit beam of high energy density and including a lamp with a cold light mirror, a heat protection filter in the path of the beam produced by the lamp, and means for cooling the heat protection filter, the improvement comprising: an interference filter disposed in the beam path; and projection optics disposed in the beam path downstream of said heat protection filter, with respect to the direction of the beam; and wherein said means for cooling comprise an axial ventilator arranged to transport a steady stream of cooling air from the downstream end to the upstream end of said condenser while brushing over the surface of one side of said heat protection filter and flowing past said lamp with its cold light mirror, and said interference filter is disposed in said optics and downstream of said heat protection filter; whereby said source produces nearly monochromatic radiation.

4,240,134

SWITCHING REGULATOR

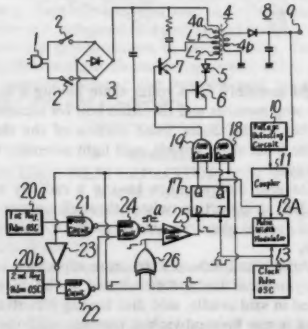
Hiroshi Nakazawa, Kawagoe, and Yasuharu Baba, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,389

Claims priority, application Japan, Apr. 17, 1978, 53/44994

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **10 Claims**



1. In a switching regulator including a DC voltage source having first and second DC output terminals, a switching transformer having a magnetic core, first and second primary windings and a secondary winding, a first switching transistor connected in series between said first and second DC output terminals through said first primary winding, a second switching transistor connected in series between said first and second DC output terminals through said first and second primary windings, rectifying means connected across said secondary winding, a load connected to said rectifying means, a clock pulse oscillator having two outputs, a pulse width modulator supplied with both outputs of said clock pulse oscillator and said rectifying means so as to produce a PWM control signal the duty of which is proportional to the voltage of said rectifying means; and switching means for selectively supplying said PWM control signal to one of said first and second switching transistors in response to the circumstances of said load; said switching regulator further comprising control means for narrowing the duty of said PWM control signal when said switching means is operated to supply said PWM control signal from one of said first and second switching transistors to the other so as to eliminate an excessive drive to the other of said switching transistors.

4,240,135

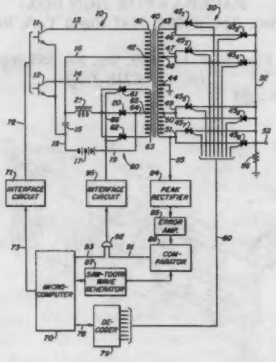
REGULATED CYCLOCONVERTER CIRCUIT

Edwin M. Schaefer, III, North Aurora, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 29, 1979, Ser. No. 42,804

Int. Cl.³ H02M *7/48*

U.S. Cl. 363—43 **5 Claims**



1. A power supply circuit comprising an inverter circuit means comprising a pair of circuit loops each including one-half of a primary winding of a transformer, a first common conducting path connected at one end to a center-tap of said primary winding, said first common conducting path including a direct current battery source, and first switching means for alternately connecting the other end of said first common conducting path in each of said loops; cycloconverter circuit means comprising a bank of second switching means connected to predetermined taps of a first secondary winding of said transformer, and first control means for selectively energizing said second switching means for selecting voltages of a first and a second, higher magnitude appearing on said first secondary winding; regulator circuit means comprising voltage monitoring circuit means associated with said first secondary winding for generating output signals indicative of voltage magnitudes appearing on said first secondary winding, a pair of circuit loops each including one-half of a second secondary winding of said transformer, a second common conducting path including a segment of said first common conducting path connected at one end to a center-tap of said second secondary winding, and third switching means for connecting said halves of said second secondary winding to the other end of said

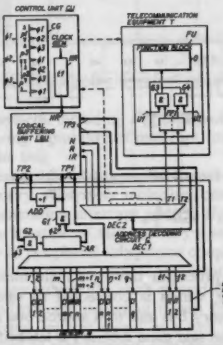
segment of said first common conducting path; comparator circuit means operated responsive to said output signals for generating error signals of a duration representative to said voltage magnitudes appearing on said first secondary winding, second control means for controlling said third switching means operated responsive to said error signals for adding voltages on said halves of said second secondary winding to voltage outputs of said battery source, and means for energizing said second control means only when said voltages of said first magnitude are selected by said cycloconverter circuit means.

4,240,136

APPARATUS FOR INSERTING INSTRUCTIONS IN A CONTROL SEQUENCE IN A STORED PROGRAM CONTROLLED TELECOMMUNICATION SYSTEM

Hans O. S. Kjoller, Västerhaninge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Feb. 13, 1978, Ser. No. 876,881
Claims priority, application Sweden, Feb. 28, 1977, 7702208
Int. Cl.³ G06F *9/32, 13/00*
U.S. Cl. 364—200 **4 Claims**



1. In a stored program controlled equipment having an operating device to be controlled, a clock pulse generator for generating sequences of timing pulses wherein adjacent timing pulses within one of the sequences establishes the clock pulse period of the equipment, an addressed memory means having an address input, an instruction output and a plurality of addressed memory element groups for storing control instructions which are read in responsive to received addresses, an address generator means having an input means and an output means and being response to said timing pulses for sequentially generating said addresses of the memory element groups to be read, and an instruction decoder means having an input and a plurality of outputs for generating control signals, apparatus for introducing one of a plurality of insertion instructions at a point in the sequence of control instructions, said apparatus comprising:

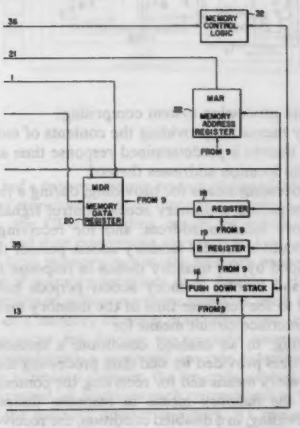
a first memory element group in the memory means for storing the insertion instruction; means for storing the address of said first memory element group; and a logical buffer unit, said logical buffer unit comprising a logical switching means having first and second address inputs for receiving addresses, an output for transmitting the address received by one of the address inputs, and a control input for controlling which of the received addresses is transmitted, a buffer register means having an input for receiving information including at least the address of an instruction and an output for transmitting therefrom after a one-clock pulse period the information received at its input, means for connecting the output of said logical switching means to the input means of said address generator means, means for connecting the output means of said address generator means to the first address input of said logical switching means, means for connecting an output of the instruction decoder means to the control input of said logical switching means, means for connecting an output of the instruction decoder means to the second address input of said logical switching means, means for connecting the output means of said address generator means to the address input of the addressed memory means, means for connecting the instruction output of the addressed memory means to the input of said buffer register means, means for connecting the output of said buffer register means to the input of the instruction decoder means, controlled gating means having a control input for connecting said means for storing the address of said first memory element group to the second address input of said logical switching means, and means for connecting an output of the instruction decoder means to the control input of said controlled gating means; a second memory element group having an address at said point in the sequence of control instructions, said second memory element group storing first indicia for indicating that an insertion reference is to be performed and second indicia for indicating that the address of said first memory element group should be fetched; and a third memory element group having the next address after the point, said third memory element group storing said first indicia and third indicia for indicating the address of the next control instruction in the sequence; said decoder means decoding said first indicia to a signal fed to the control input of said logical switching means, decoding said second indicia to a signal fed to the control input of said controlled gating means, and feeding said third indicia to the second address input of said logical switching means whereby an insertion instruction is introduced into the sequence of control instructions.

4,240,137

COMPUTER FOR DIRECTLY EXECUTING A PROGRAM INCLUDING A PLURALITY OF STRUCTURED BLOCKS

Yoshihiro Matsumoto, and Hajime Kurii, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jun. 26, 1978, Ser. No. 919,297
Claims priority, application Japan, Feb. 13, 1978, 53/14141
Int. Cl.³ G06F *9/40*
U.S. Cl. 364—200 **9 Claims**



1. A computer for directly executing a program including a plurality of structured blocks, comprising:

a main memory device for storing said program;

a program counter for designating an address of an instruction to be executed;

a first register for storing an entry address of a first block of said program;

a second register for storing an entry address of a second block of said program;

a push down stack for storing an entry address of a third block of said program;

means for causing said program counter to designate a predetermined address for reading an instruction from said main memory device thereby reading out from said main memory device said entry address of an instruction of the contents of either one of said first, second and third blocks of the program;

means for causing the storage of said read out entry address in said first and second registers and in said push down stack respectively;

means for unloading the content of the first register, second register, or popping up said push down stack and for storing the content of one of said first register, second register, or push down stack in said program counter; and

means for producing an instruction for popping up said push down stack and for discarding an entry address derived therefrom in response to a predetermined instruction in one of said blocks.

4,240,138

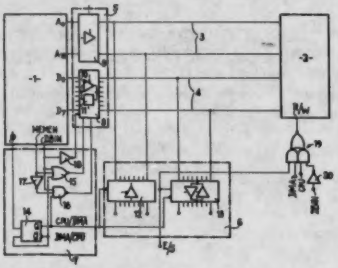
SYSTEM FOR DIRECT ACCESS TO A MEMORY ASSOCIATED WITH A MICROPROCESSOR

Gerard Chauvel, Cagnes-sur-Mer, France, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 3, 1978, Ser. No. 948,284

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **2 Claims**



1. A data processing system comprising:

memory means for providing the contents of memory locations therein a predetermined response time after receiving the location addresses thereof;

data processing means for providing, during a first memory access period, a primary access control signal and a first memory location address, and for receiving, during a consecutive, second memory access period, the contents provided by the memory means in response thereto, the first and second memory access periods being at least equal to the response time of the memory means;

buffer interface circuit means for

applying, in an enabled condition, a memory location address provided by said data processing means to said memory means and for receiving the contents provided by the memory means in response thereto, and for providing, in a disabled condition, the received contents to the data processing means;

direct access interface means for applying, in an enabled condition, a received second memory location address to the memory means, and for receiving and providing, in the enabled condition, the contents provided by the memory means in response thereto; and

data flow control means for receiving the primary access control signal and an asynchronous, secondary access control signal, for enabling only said direct access interface means for at least said response time in response to receiving only the secondary access control signal, and for enabling said buffer interface means for at least said response time in response to receiving the primary access control signal.

4,240,139

ADDRESS GENERATING SYSTEM

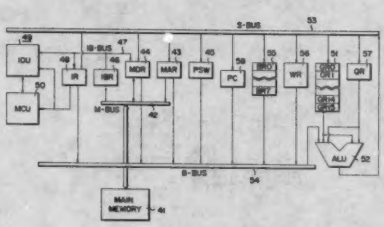
Yasuo Fukuda, Higashimurayama; Michio Arai, Kawasaki, and Hidemi Yamamoto, Kunitachi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 14, 1978, Ser. No. 942,452

Claims priority, application Japan, Sep. 22, 1977, 52-113233; Sep. 22, 1977, 52-113234

Int. Cl.³ G11C *8/00*

U.S. Cl. 364—200 **9 Claims**



1. In a data processor having a main memory; a memory address register which is connected to said main memory through a memory bus and to a source bus and in which an address to access said main memory is latched; a memory data register which is connected through the memory bus to said main memory and to the source bus and in which data read out from said main memory or to be loaded into the same is latched in accordance with the address latched in said memory address register; a program status word which is connected to the source bus and a destination bus and in which interrupt levels and condition flags are set; wherein the improvement comprises:

an instruction buffer register which is connected through the memory bus to said main memory and stores an instruction read out from said main memory, said instruction including a plurality of address modification fields and a field for selecting one of these address modification fields;

an instruction register which is connected through an instruction buffer bus to said instruction buffer register and stores the instruction;

instruction judging control means which is connected through the instruction buffer bus to said instruction register and judges the instruction stored in said instruction register to produce microinstructions corresponding to the instruction;

microprogram control unit connected to said instruction judging control means to control the microinstructions outputted from said instruction judging control means;

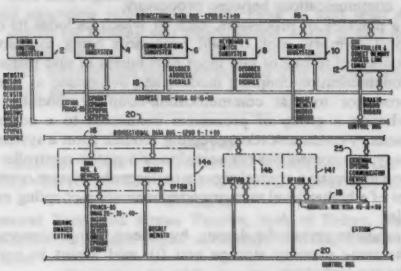
a working register connected to the source bus and the destination bus and used as a temporary buffer in execution of the microinstructions; and

address modifying means for performing a desired address modification on the basis of the result of judgment by said instruction judging control means as to the field for selecting either of the address modification fields.

4,240,140
CRT DISPLAY TERMINAL PRIORITY INTERRUPT APPARATUS FOR GENERATING VECTORED ADDRESSES

John P. Stafford, Nashua, N.H.; Minoru Inoshita, Glendale, Ariz., and Gerald N. Winfrey, Billerica, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 26, 1978, Ser. No. 973,462
Int. Cl.³ G06F *9/36, 9/46*
U.S. Cl. 364—200 5 Claims



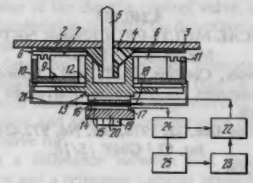
1. A cathode ray tube display terminal system comprising:
a system bus;
a memory subsystem, including a plurality of memory locations for storing a plurality of interrupt routines, coupled to said system bus;
a central processor subsystem coupled to said system bus and to said memory subsystem including central processor means for generating interrupt address signals indicative of a memory location of said memory system;
a first plurality of peripheral subsystems coupled in common to said system bus, to said central processor subsystem and to said memory subsystem, each of said first plurality of peripheral subsystems including means for generating a unique interrupt request signal in a first state when requesting access to said memory subsystem; and,
said central processor subsystem including interrupt means responsive to said unique interrupt request signal in said first state from a selected one of said first plurality of peripheral subsystems having a predetermined priority for modifying said interrupt address signals, said modified interrupt address signals being indicative of a first starting address location referencing a selected one of said plurality of interrupt routines for processing the interrupt request of said selected one of said first plurality of peripheral subsystems by said central processor subsystem.

4,240,141
VIBRATION MOTOR

Petr E. Vasiliev, ulitsa Ugnyagyasju, 9, kv. 17, Vilnjus; Vladimir S. Dvornin, derevnya Pagirai, 8, kv. 13, Vilnjussky raion; Alexandr V. Kondratiev, prospekt Kosmonavtov, 43, kv. 72, and Vladimir F. Kravchenko, ulitsa Venuolisa, 4, kv. 12, both of Vilnjus, all of U.S.S.R.

Filed Apr. 27, 1979, Ser. No. 34,016
Int. Cl.³ H02K *33/00*
U.S. Cl. 318—114 4 Claims

1. A vibration motor comprising: a concentrator of torsional vibrations; a rotor held firmly against the end face of said concentrator; a magnetic field source located under said rotor at the side of said concentrator and having a power sufficient to hold said rotor in tight contact with said concentrator a magnetic circuit enclosing said magnetic field source; a movable part of said magnetic circuit, rigidly attached to said rotor and fashioned as a disk; slots equispaced along a circumference of said disk; a stationary part of said magnetic circuit, separated from said movable part thereof by an air gap and encircling said magnetic field source; peripheral slots in said stationary part, which are identical to said disk slots and arranged opposite to them; said magnetic field source and magnetic circuit forming a rotational speed pickup for said rotor; a piezoelectric cell unit adjoining said concentrator; a high-frequency electric oscillator whose output is connected with said piezoelectric

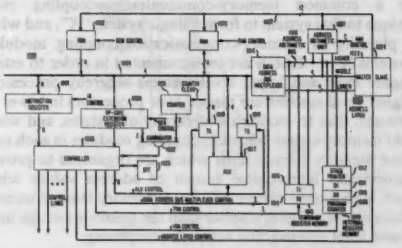


cell unit; and adjustable d-c power supply source whose output is connected with the input of said oscillator; a frequency detector whose output is connected with the input of said d-c power supply source and whose input is connected with the output of said rotor speed pickup.

4,240,142
DATA PROCESSING APPARATUS PROVIDING AUTOINCREMENTING OF MEMORY POINTER REGISTERS

Donald E. Binhut, Holmdel; David H. Copp, Morristown, and Daniel C. Stanzione, Marlboro, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1978, Ser. No. 974,361
Int. Cl.³ G06F *9/32*
U.S. Cl. 364—200 2 Claims



1. A CPU of a data processing system designed for executing a program of stored instructions through a sequence of instruction cycles, the CPU including means for retrieving stored instructions and data comprising operands and op-code extension words from memory means, the memory means having a multiplicity of memory locations each having a distinct address; a plurality of memory pointer registers, each for storing an address of a memory location containing data; an op-code extension register for storing an op-code extension word; means for transferring a retrieved op-code extension word to the op-code extension register, the op-code extension register having designated bit positions each corresponding to a different one of the memory pointer registers, the contents of the op-code extension register being changed only when the CPU executes an instruction for transferring a newly selected op-code extension word to the op-code extension register; and means responsive to the contents of the designated bit positions of the op-code extension register for adding during an instruc-

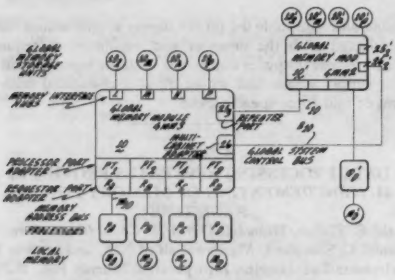
tion cycle a fixed quantity to each address stored in memory pointer registers having corresponding designated bit positions containing a first binary state and leaving unaltered each address in memory pointer registers having corresponding designated bit positions containing a second binary state.

4,240,143

HIERARCHICAL MULTI-PROCESSOR NETWORK FOR MEMORY SHARING

John O. Besemer, Cerritos, Calif., and Clifford J. Bellamy, Malvern, Australia, assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 22, 1978, Ser. No. 972,431
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **11 Claims**



1. In a network for the coupling of processor-groups, forming a system "III" to processor-groups forming a system "II", to processor-groups forming a system "I", to processor-groups forming a system "0", and wherein each of said processor-groups includes processors having individual bus connections to a common memory-communication-coupling module unique to that system to form a single system "X", and wherein a plurality of memory-communication-coupling modules of systems X . . . II, I, 0 are interconnected in order to establish higher level and lower level systems whereby processors in higher level systems are master over processors in lower level systems, thus to establish a hierarchy of systems, and wherein said memory-communication-coupling modules in each system have memory storage units which are organized to provide a numerically hierarchical system of address values wherein each higher level system will have memory storage units with addresses of a higher number than the memory storage units in lower level systems, the network comprising:

(a) a plurality of memory-communication-coupling modules connected to form upper and lower level systems of processors and memories, each of said memory-communication-coupling modules including:

(a1) a memory controller for controlling access to memory storage units and including:

(a1-1) a plurality of interface hub means, each hub means interfacing a discrete memory storage unit;

(a1-2) a plurality of discrete memory storage units organized to have sequentially increasing unit numbers (i) and wherein each unit provides memory locations having addresses which increase sequentially in value from lower numbered (i-1) memory storage units;

(a1-3) a repeater port means for conveying memory request addresses which are greater in value than the highest memory address available in the memory storage units of a coupling module;

(a2) a plurality of input port means individually connected to a plurality of processors, each of said input port means including:

(a2-1) a requestor port adapter for each connected processor for transmitting memory request signals and commands from the connected processor to said memory controller in said memory-communication-coupling module;

(a2-2) a processor port adapter for each connected processor for transmitting system control signals from the connected processor to a system controller in said memory-communication-coupling module;

(a3) a repeater bus connected to said repeater port means for transmitting, to an upper level system, memory addresses having larger values than those available in a coupling module;

(a4) a system controller for controlling data transmission and communications between processors;

(b) a plurality of processors, each of which includes its own local memory, each of said processors being exclusively connected to one of said input port means of said memory-communication-coupling module and designated as a local processor to that communication-coupling module, and wherein a group of processors connected to a common memory-communication-coupling module form a system;

(c) a system control bus connected to said system controller for communicating control signals to/from the system controller of a higher level memory-communication-coupling module;

(d) means to permit the sharing, by at least two processors, of the same memory storage unit (i), said means to permit sharing including:

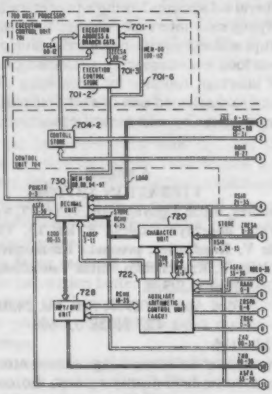
(d1) access register means in each of said processor port adapters wherein said access register means is programmed to determine which address locations in a selected memory storage unit in the hierarchy may or may not be read from, or be written into, by the requesting processor connected to the port adapter holding that particular access register means.

4,240,144

LONG OPERAND ALIGNMENT AND MERGE OPERATION

Jerry L. Kindell, Glendale, and Richard T. Flynn, Peoria, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1979, Ser. No. 399
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **16 Claims**



13. A data processing system comprising:

memory means for storing operands and instrutions, each instruction including descriptor information for describing characteristics of said operands, and an operation code portion specifying a decimal numeric operation performed by said system;

decimal unit coupled to said memory means for receiving said signals indicative of said descriptor information, and

also for transferring operands between said memory means and said decimal unit, in response to signals indicative of said decimal numeric instruction;

executing means coupled to said decimal unit for receiving a first and a second operand of said operands for performing an operation specified by said decimal numeric instruction and generating long operand words for transfer to said decimal unit in response to signals indicative of said decimal numeric instruction;

said decimal unit being responsive to said decimal numeric instruction signals for generating start write signals and send data signals;

said executing means being responsive to said send data signals for sending said long operand words to said decimal unit and said memory means being responsive to said start write signals for receiving said long operand words from said decimal unit.

4,240,145

CLOSED LOOP CONTROLLED AUXILIARY AIR DELIVERY SYSTEM FOR INTERNAL COMBUSTION ENGINE

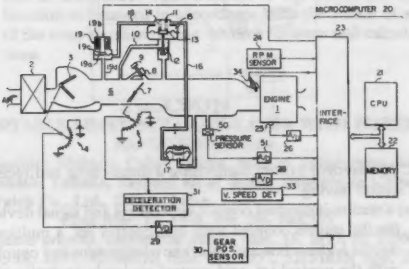
Tsuneomi Yano, and Haruo Yuzawa, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 30, 1978, Ser. No. 965,467

Claims priority, application Japan, Dec. 1, 1977, 52/143309; Dec. 1, 1977, 52/143310

Int. Cl.³ G06F *7/70*; F02M *23/06, 23/08*

U.S. Cl. 364—431 **10 Claims**



1. A method for controlling an internal combustion engine having a main air intake passage for introducing air into said engine, a throttle control valve in said main air intake passage, an auxiliary air intake passage for partially passing air from an upstream side to a downstream side of said throttle control valve, a second control valve in said auxiliary passage, and a vacuum pressure sensor provided downstream of said throttle control valve, the method comprising the steps of:

detecting when deceleration of said engine is started;

measuring the length of time from the occurrence of said deceleration;

sensing vacuum pressure downstream of said throttle control value with said vacuum pressure sensor;

generating a first binary signal representative of the vacuum pressure sensed by said vacuum pressure sensor;

generating a second binary signal representative of a reference intake vacuum pressure according to a function defining a desired relationship between said length of time and the intake vacuum pressure sensed by said vacuum pressure sensor;

comparing said first binary signal with said second binary signal to generate a control signal representative of the difference between said sensed vacuum pressure and said reference vacuum pressure; and

controlling said second control valve in response to said control signal to reduce the difference between said sensed vacuum pressure and said reference vacuum pressure substantially to zero.

4. A control system for use in an internal combustion engine having a main air intake passage for introducing air to said engine, a throttle control valve in said main intake passage and an auxiliary air intake passage connected to said main intake passage for partially passing air from an upstream side to a downstream sine of the throttle control valve, comprising:

an engine deceleration detector for detecting when deceleration of said engine is started;

means for detecting intake vacuum pressure in said main intake passage downstream of said throttle control valve;

a programmed microcomputer responsive to said deceleration detector and said vacuum pressure detecting means and operative for

detecting a difference between said detected vacuum pressure and a reference vacuum pressure from a function defining a desired relationship between the length of time from the occurrence of said engine deceleration and the intake vacuum pressure in said main intake passage at the downstream side of said throttle control valve; and

generating a control signal representing said difference; and

means provided in said auxiliary air intake passage for controlling the air passing therethrough in response to said control signal to reduce said difference substantially to zero.

4,240,146

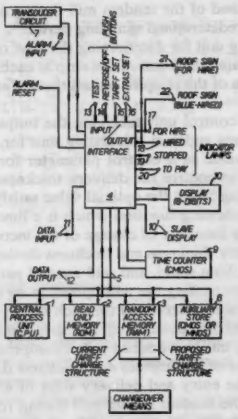
INDICATING DEVICES

Christopher W. Iles, Newton Ferrers, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed May 26, 1978, Ser. No. 843,748

Int. Cl.³ G07B *13/00*

U.S. Cl. 364—467 **11 Claims**



1. A taximeter comprising:

processing means for calculating a taxi fare;

random access memory means having first and second memory areas for storing tariff information;

date input means operable under the control of the processing means for loading the first memory area with said tariff information relating to a first tariff and for loading the second memory area with said tariff information relating to a second tariff;

coupling means for coupling the first memory area with the processing means so as to enable the processing means to calculate a taxi fare in accordance with the first tariff; and

changeover means operable in response to a predetermined

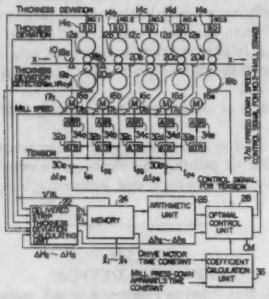
command signal for coupling the processing means with the second memory area so as to enable the processing means to calculate thereafter a further taxi fare in accordance with the second tariff.

4,240,147

GAUGE CONTROL METHOD AND SYSTEM FOR ROLLING MILL

Yasuo Morooka; Shinya Tanifuji, and Shigemichi Matsuka, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 780,788, Mar. 24, 1977, abandoned. This application Jun. 7, 1978, Ser. No. 913,455
Claims priority, application Japan, Mar. 26, 1976, 51-33294
Int. Cl.³ G06F *15/46*; B21B *37/12*
U.S. Cl. 364—472 **13 Claims**



1. A system for minimizing deviations in the delivered strip thickness in a tandem rolling mill, comprising:

means for sampling one of thicknesses and thickness deviations of the strip at the entry and delivery sides of each rolling stand of the tandem mill during rolling operation with a predetermined sampling period;

a calculating unit for determining the time rate of change of the incoming thickness of the strip at each rolling stand as a function of the sampled values thereof and the sampling period;

an optimal control unit receiving the outputs of said sampling means and said calculating unit for determining an optimal value of a control parameter for mill operation effective to control the delivery thickness of the strip at each rolling stand, the optimal value satisfying a predetermined evaluating function which is a function of at lease one of the time rate of change of the incoming thickness, the delivery thickness and thickness deviation of the strip at each rolling stand, and said control parameter; and

means for controlling the mill operation on the basis of said optimal value determined for each rolling stand.

8. A method for controlling the strip thickness out of a tandem rolling mill to a desired value, comprising the steps of:

sampling one of thicknesses and thickness deviations of the strip at the entry and delivery sides of a respective mill stand of the tandem rolling mill during rolling operation with a predetermined sampling period and generating electrical signals in accordance therewith;

determining the time rate of change of the incoming thickness of the strip at respective mill stands as a function of the generated electrical signals of the sampled values thereof and the sampling period and generating electrical signals in accordance therewith;

obtaining optimal values of control variables at respective mill stands in response to the generated electrical signals of the time rate of change of thickness of the strip and generating electrical signals in accordance therewith, the values being obtained for satisfying a predetermined evaluating function; and

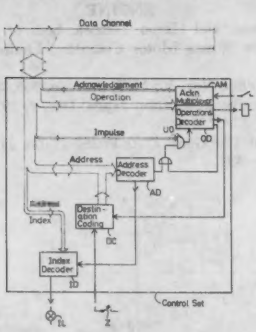
automatically controlling the tandem rolling mill in response to the generated electrical signals of the optimal values obtained so as to maintain the optimal values and minimize deviations in the delivered strip thickness.

4,240,148

CENTRALLY CONTROLLED CONVEYOR SYSTEM

Ferdinand Thoma, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 949,874
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748448
Int. Cl.³ G06F *15/20*; B65G *43/00*
U.S. Cl. 364—478 **11 Claims**



1. A conveyor system comprising a dispatching and receiving station having

(a) a station-individual control set, control and signal devices for the station coupled with said control set, a multiconductor address line and an acknowledgement line coupled with the control set, said control set having a destination selection device,

(b) address decoding means comprising an address decoder for receiving station individual address information from the address line and for comparing the same with an assigned individual address for identifying said station, said address decoding means being operable for responding to the received address information when coincidence is present with respect to said assigned individual address for enabling coupling with the acknowledgement line,

(c) an operation decoder which can be switched ready for operation by means of an actuation signal from the address decoder, a multiconductor control line for coupling with the operation decoder when switched ready for operation for rendering said operation decoder effective, after receipt of operation information from the control line, to effect a destination information transfer operation,

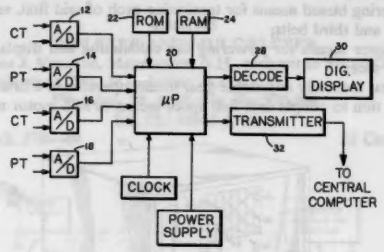
(d) a destination selection device connected to the address line in parallel with the assigned address decoder for the transmission of destination information identifying a desired receiver station to the address line,

(e) said station being responsive to address information in accordance with transmitted destination information on the address line, and said operation decoder being responsive to operation information from the control line for actuating said control and signal devices in effecting conveyor processes to and from said station.

4,240,149
MEASURING SYSTEM

David L. Fletcher, and Walter O. Stadlin, both of North Wales, Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Feb. 16, 1979, Ser. No. 12,632
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—483 5 Claims



1. The method for measuring a parameter whose value is calculable as the integral with time of a function of at least one variable which has a value following a periodic wave form, comprising the steps of:

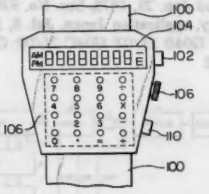
sampling the value of said variable periodically at a frequency asynchronous with said wave form; and

periodically calculating the value of the integral of the function in accordance with the sum of the values for the function determined in accordance with the values of all of the samples taken during the time between said calculations.

4,240,150
PORTABLE TIMEPIECE CALCULATOR WITH POWER SAVINGS FEATURE

Heihachiro Ebihara; Fukuo Sekiya, both of Tokorozawa, and Takashi Yamada, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1978, Ser. No. 885,733
Claims priority, application Japan, Mar. 15, 1977, 52/27595; Mar. 18, 1977, 52/30026; Mar. 23, 1977, 52/31833; Apr. 18, 1977, 52/44251
Int. Cl.³ G06F *7/48, 15/02;* G04B *19/30*
U.S. Cl. 364—705 1 Claim



1. A portable timepiece calculator, comprising: an oscillator circuit for providing a time base signal;

a timing pulse generator for generating pulses in response to said time base signal;

a keyboard having numeric keys and functions keys, for supplying key input signals when actuated;

a frequency divider for providing a standard time signal in response to said time base signal;

an interrupt signal generation circuit responsive to said standard time signal and said key input signals, respectively, for generating an interrupt signal;

an address selection circuit responsive to said interrupt signal for generating a timekeeping operation address signal and a calculation operation address signal;

a control circuit responsive to said timekeeping operation address signal and said calculation operation address signal for generating a first control signal and a second control signal, respectively, said control circuit being responsive to said key input signals and said calculation operation address signal for enabling the supply of said time base signal to said timing pulse generator, for thereby enabling the operation of said timing pulse generator;

calculation circuit means responsive to said timing pulses and said key input signals to perform a calculation and provide calculated data;

an hours, minutes and seconds register and a calculation register for storing hours, minutes and seconds information and said calculated data, respectively;

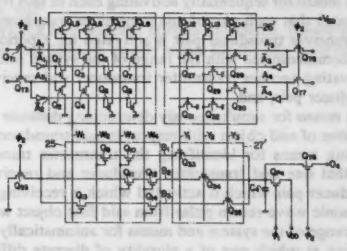
a selector responsive to said first control signal to connect said hours, minutes and seconds register with said calculation circuit means to provide a first loop in which time information is circulated, said selector responsive to said second control signal to connect said calculation register with said calculation circuit means to provide a second loop in which calculated data is circulated; and

a display device responsive to said time information and said calculated data to provide displays of said time information and said calculated data.

4,240,151
SEMICONDUCTOR READ ONLY MEMORY

Hiroto Kawagoe, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Continuation of Ser. No. 656,854, Feb. 10, 1976, abandoned.
This application Jan. 25, 1978, Ser. No. 875,012
Claims priority, application Japan, Feb. 10, 1975, 50-16280
Int. Cl.³ G11C *17/06*
U.S. Cl. 365—104 34 Claims



14. A logic circuit comprising:

a plurality of field effect transistors being selectively arrayed along a plurality of rows and columns so that the transistors arrayed along the each row are connected in series with one another between a common output terminal and another common terminal;

a plurality of row address lines, for applying a row address signal in accordance with a row address code pattern, being arrayed along prescribed ones of said plural columns at any one of which said each row has at least one selection field effect transistor of said plural field effect transistors, respective ones of said plural row address lines being connected to the gates of said selection transistors at said respective rows in accordance with said row address code pattern so that said at least one selection field effect transistor at only one of said plural rows is allowed to become conductive in response to said row address signal; and

a plurality of column address lines, for applying a column address signal in accordance with a column address code pattern, being arrayed along the others of said plural columns at which said each row has the memory field

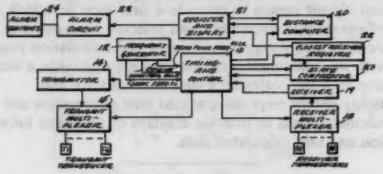
effect transistors other than said at least one selection field effect transistor of said plural field effect transistors, respective ones of said plural column address lines being connected to the gates of said memory transistors in accordance with said column address code pattern to apply said column address signal.

4,240,152

OBJECT INDICATOR FOR MOVING VEHICLES

Robert L. Duncan, P.O. Box 887, Radford, Va. 24141, and Paris H. Wiley, 205 Maywood St., Blacksburg, Va. 24060

Filed Jun. 15, 1978, Ser. No. 915,728
Int. Cl.³ G01S *15/42, 15/93*
U.S. Cl. 367—108 14 Claims



1. A system for locating and determining the distance of a first object with respect to a receiver transducer mounted on a reference object using ultrasonic wave pulses comprising:

(a) at least three transducers; wherein at least two of said three transducers operate as receiver transducers and at least one of said three transducers operates as a transmitter transducer; and

(b) means for sequentially activating each of said transducers such that each pair of one transmitter transducer and one receiver transducer pair is activated for a period of time commensurate with the range of the system prior to activating another transmitter transducer and receiver transducer pair; and

(c) means for simultaneously determining distance and location of said object with respect to said transducers including means for identifying the transmitter transducer of that one said transmitter transducer and receiver transducer pair which is activated which is receiving an ultrasonic wave return pulse from said first object within said range of the system and means for automatically calculating at which one of a plurality of discrete different distances within said range at which said first object is positioned relative to said one of said transmitter transducer and receiver transducer pairs which is activated, based upon elapsed time between the activation of one transmitter transducer and receiver transducer pair and said ultrasonic wave pulse return.

4,240,153

BIORHYTHM DISPLAY DEVICE

Raymond L. Merritt, 32 Lakeside Dr., Little Rock, Ark. 72204

Filed Feb. 13, 1978, Ser. No. 877,574
Int. Cl.³ G04B *19/24, 19/02;* G06C *3/00;* G09D *3/00*
U.S. Cl. 368—28 4 Claims

1. A biorhythm calculating and display device comprising;

a first endless belt marked with a sinusoidal pattern for indicating a physical biorhythm function;

a second endless belt marked with a sinusoidal pattern for indicating the emotional biorhythm function;

a third endless belt marked with a sinusoidal pattern for indicating the intellectual biorhythm function;

said first, second and third belts comprising thereof overlying one another throughout a substantial portion of the length of each belt to thereby provide a composite biorhythm display image;

a viewing area in which said composite biorhythm image is visibly disposed;

means for illuminating said viewing area;

first spool means for suspending and rotating said first belt;

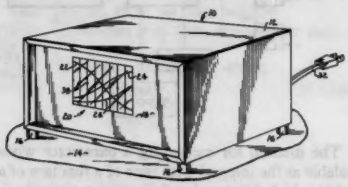
second spool means for suspending and rotating said second belt;

third spool means for suspending and rotating said third belt;

spring biased means for tensioning each of said first, second and third belts;

motor means for powering the calculating and display device;

first manually adjustable gear means operable in a first position to couple said first spool means to said motor means



and operable in a second position to disengage said first spool means from said motor means and to synchronize said first belt with the physical biorhythm function of an individual;

second manually adjustable gear means operable in a first position to couple said second spool means to said motor means and operable in a second position to disengage said second spool means from said motor means and to synchronize said second belt with the emotional biorhythm function of an individual; and,

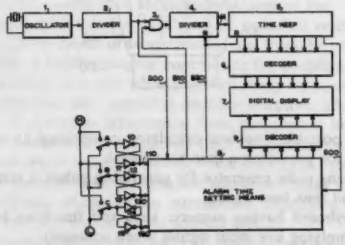
third manually adjustable gear means operable in a first position to couple said third spool means to said motor means and operable in a second position to disengage said third spool means from said motor means and to synchronize said third belt with the intellectual biorhythm function of an individual.

4,240,154

ELECTRONIC DIGITAL STOP WATCH

Mitsuo Sekine, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,443
Claims priority, application Japan, Jul. 8, 1977, 52/81804
Int. Cl.³ G04B *23/02;* G04C *21/00;* G04F *8/00*
U.S. Cl. 368—72 18 Claims



1. An electronic digital stop watch comprising: a time standard signal generator; a frequency divider for dividing the frequency of said time standard signal to form a time unit signal, means for keeping a time in accordance with the frequency of said time unit signal; alarm control means which

comprises a presettable down counter, manually operable means for presetting a desired alarm time in said presettable down counter, means for detecting the relationship between the time kept in said time-keeping means and the alarm time set in said presettable down counter to generate an alarm signal, and an audible signal generator energized by said alarm signal; and a display device for indicating the time kept in said time-keeping means or the time preset in said presettable down counter.

4,240,155

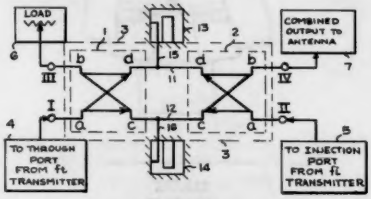
DIPLEXER AND MULTIPLEXER

Thomas J. Vaughan, Manchester, N.H., assignor to Micro Communications, Inc., Manchester, N.H.

Filed Jun. 28, 1978, Ser. No. 920,004

Int. Cl.³ H04J 1/08

U.S. Cl. 370—69 **22 Claims**



1. A high frequency signal combiner for combining the power of two different frequency signals ft and fi in a common transmission line comprising,

(a) two directional couplers, an ft coupler and an fi coupler,

(b) means for coupling ft to a port of the ft coupler

(c) means for coupling fi to a port of the fi coupler,

(d) an output to the common transmission line from a port of the fi coupler and

(e) means including a transmission line stub and a tuned circuit for coupling together other ports of the ft and fi couplers that readily transmit ft signals from the ft coupler to the fi coupler while reflecting fi signals from the fi coupler back to the fi coupler,

(f) whereby substantially all of the ft and fi signal power to the couplers is fed from the output to the common transmission line.

4,240,156

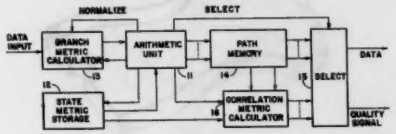
CONCATENATED ERROR CORRECTING SYSTEM

George D. Doland, 1602 Redway La., Houston, Tex.

Filed Mar. 29, 1979, Ser. No. 25,079

Int. Cl.³ G06F 11/10

U.S. Cl. 371—43 **8 Claims**



1. A Modified Viterbi Decoder Process, said moficiations to a conventional Viterbi Decoder Process comprising the steps as follows:

(a) algebraically adding the state metric scores for each state transition one constraint length prior to the output terminal of each branch in the search length path memory,

(b) subtracting the state metric scores for each state transition at the output terminal of each branch in the search length path memory,

(c) selecting the correlation metric value derived by said steps (a) and (b) above for the branch which is selected for the information bit output of said Modified Viterbi Decoder, and

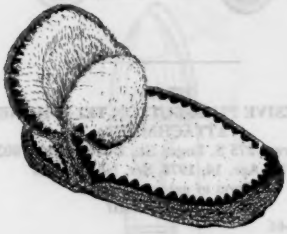
(d) providing said selected correlation metric values as the output soft decision quality signal for the said information bit.

DESIGNS

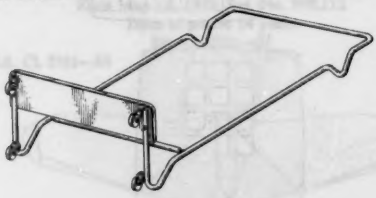
DECEMBER 16, 1980

257,621
WORKMAN'S JACKET
Matti Viio, Box 563, 191 05 Sollentuna, Sweden
Filed May 2, 1978, Ser. No. 902,154
Claims priority, application Sweden, Nov. 2, 1977, 2224
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—187

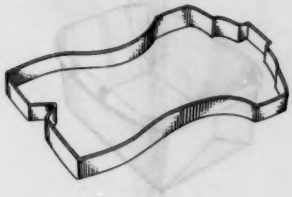
257,622
SLIPPER
Dawn V. Eskelsen, Bulls Rd., Kerikeri, New Zealand
Filed Oct. 17, 1978, Ser. No. 952,044
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—266



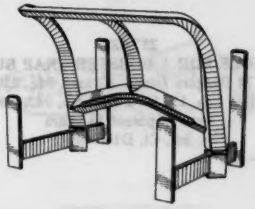
257,623
MOBILE BED FRAME
Richard C. Bue, Chaska, and Earl L. Luckes, Minnetonka, both of Minn., assignors to Sico Incorporated, Minneapolis, Minn.
Filed May 18, 1978, Ser. No. 907,314
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



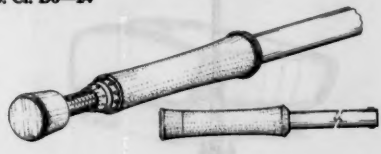
257,624
COOKIE CUTTER
Ethel Keller, 13846 N. 41st Ave., Phoenix, Ariz. 85023
Filed Sep. 19, 1977, Ser. No. 834,096
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—44



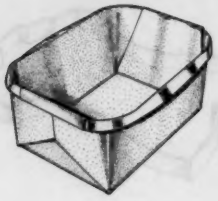
257,625
FIREPLACE GRATE
David H. Dent, 2550 Marra Rd., Occidental, Calif. 95465
Filed Feb. 17, 1978, Ser. No. 878,580
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207



257,626
TORQUE WRENCH LEVER
Bosko Grabovac, Mission Viejo, Calif., assignor to Consolidated Devices, Inc., City of Industry, Calif.
Filed Oct. 12, 1977, Ser. No. 841,547
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—24

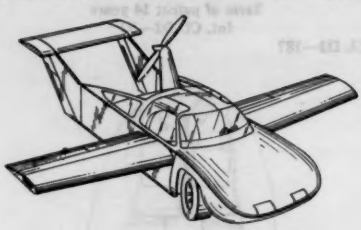


257,627
PACKAGING TRAY
Rolf U. Andersson, Lund, Sweden, assignor to AB Akerlund & Rausing, Sweden
Filed Aug. 18, 1977, Ser. No. 825,677
Claims priority, application Sweden, Sep. 2, 1977, 77486
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433

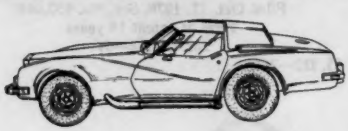


257,628
SPINDLE FOR A LOBSTER TRAP BUOY
Emile Plante, 74 Badgers Island, Kittery, Me. 03904
Filed Sep. 15, 1978, Ser. No. 942,679
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—121

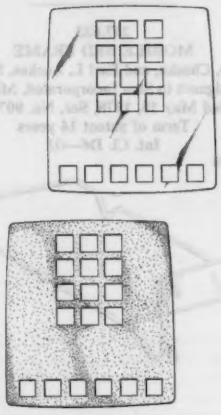
257,629
CONVERTIBLE AIRPLANE AND AUTOMOBILE
Harvey R. Miller, 3655 E. Amazon, Eugene, Oreg. 97405
Continuation-in-part of Ser. No. 841,220, Oct. 11, 1977, abandoned. This application May 23, 1979, Ser. No. 41,712
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—4



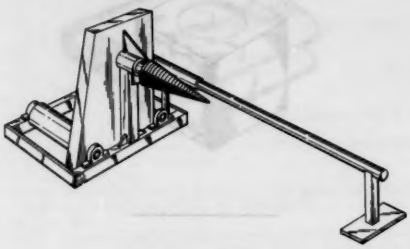
257,630
AUTOMOBILE
Leslie N. Dunham, 234 Division St., Boonton, N.J. 07005
Filed Nov. 10, 1978, Ser. No. 961,229
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—92



257,631
ADHESIVE PUSH-BUTTON TELEPHONE ATTACHMENT
Allen R. LeCornu, 275 S. Logan St., Denver, Colo. 80209
Filed Apr. 14, 1978, Ser. No. 896,324
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



257,632
LOG SPLITTER
Richard L. Barger, Washington Court House, Ohio, assignor to Scope Manufacturing Company, Washington Court House, Ohio
Filed Mar. 22, 1978, Ser. No. 889,052
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—127



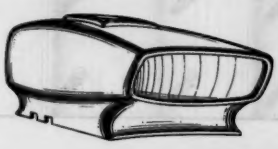
257,633
SKILL TOY
John M. Garcia, 855 Wintergreen Ave., Hamden, Conn. 06514
Filed Jul. 31, 1978, Ser. No. 929,828
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—62

257,634
AERIAL TOY
Gary L. Miller, 10300 E. Service Rd., Denair, Calif. 95316, and Robert M. Hibdon, 1421 Ashwood, Modesto, Calif. 95350
Filed May 11, 1979, Ser. No. 905,112
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—88

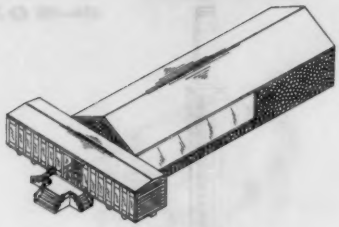
257,635
TOY SWORD
Ronald Carreiro, 28 Sargent Rd., South Weymouth, Mass. 02190
Filed Dec. 11, 1978, Ser. No. 968,396
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—109

257,636
ARTIFICIAL FISHING LURE
William O. Williams, Jr., Rte. 2, Box 172, Clover, S.C.
Filed Mar. 8, 1979, Ser. No. 18,574
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

257,637
VEHICLE ROOF MOUNTED AIR CONDITIONER COWLING
Joseph M. Armbruster, Lighthouse Point, Fla., assignor to Sheller-Globe Corporation, Toledo, Ohio
Filed Jul. 11, 1978, Ser. No. 923,670
Term of patent 3½ years
Int. Cl. D23—*04*
U.S. Cl. D23—142

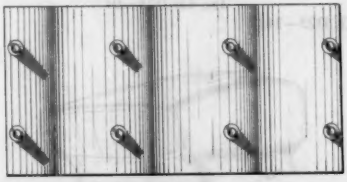


257,638
RAILROAD RESTAURANT
Gary M. Levin, 940 E. 19 St., Brooklyn, N.Y. 11230
Filed Jul. 27, 1978, Ser. No. 928,387
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—11



257,639
POST FOR STORAGE RACKING
Kenneth G. Reid, West Vancouver, and Jerome R. Dinn, Burnaby, both of Canada, assignors to Pacific Steel Ltd., New Westminster, Canada
Filed Jun. 14, 1978, Ser. No. 915,953
Term of patent 14 years
Int. Cl. D25—*01, 99*
U.S. Cl. D25—78

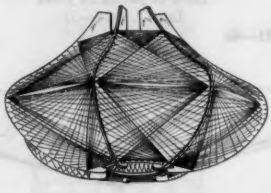
257,640
TEMPERATURE INSULATING FOAM PANEL
Albert L. Hughey, Carmel, and Paul B. Hughey, Indianapolis, both of Ind., assignors to Vantage Construction Company Incorporated
Filed Dec. 21, 1978, Ser. No. 971,948
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—96



257,641
CANDLE
Stephen P. Taylor, 225 Roosevelt Ave., Louisville, Colo. 80027
Filed Dec. 26, 1978, Ser. No. 973,391
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—6

257,642
CANDLE
Stephen P. Taylor, 225 Roosevelt Ave., Louisville, Colo. 80027
Filed Dec. 26, 1978, Ser. No. 973,393
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—6

257,643
LUMINAIRE
Frederic Zurcher, 701 Willow La., Geneva, Ill. 60134
Filed May 23, 1978, Ser. No. 908,897
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—85

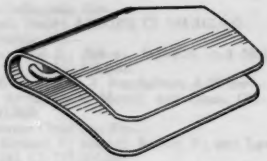


257,644

LAMP SHADE

Bruno Gecchelin, Milan, Italy, assignor to Skipper S.p.A., Milan, Italy

Filed Jun. 23, 1978, Ser. No. 918,661
Claims priority, application Italy, Jan. 18, 1978, 20495 A/78
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—118

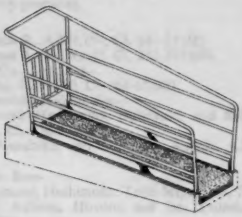


257,645

RAILING FOR A DOG TREADMILL

Roger R. Ruetenik, W. Lake Rd., Vermilion, Ohio 44089

Filed Oct. 2, 1978, Ser. No. 947,852
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42



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Benoit, Robert; Machefer, Jacques; Mauvisseau, Jacques; and Plurien, Pierre. Method of separation of a gas from a gas mixture. 4,239,507, Cl. 55-16.000.
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Bevilacqua, Frank; Callaghan, Vincent M.; and Van Fleet, James L., to Combustion Engineering, Inc. Passive residual heat removal system for nuclear power plant. 4,239,596, Cl. 176-37.000.
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Bott, John A. Sliding tie down vehicle luggage carrier. 4,239,139, Cl. 224-324.000.

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Boynton, Kenneth G., to Cooper Industries, Inc. Soldering flux. 4,239,812, Cl. 427-96.000.

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Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,925, Cl. 568-902.000.

Braatz, Paul O.; Chow, Kuen; and Grinberg, Jan, to Hughes Aircraft Company. Semiconductor light valve having improved counterelectrode structure. 4,239,347, Cl. 350-336.000.

Braatz, Paul Q.: *See*—
Grinberg, Jan; Waldner, Michael; Braatz, Paul Q.; and Jacobson, Alexander D., 4,239,348, Cl. 350-342.000.

Bradford, Joseph, Sr. Flying toy. 4,238,906, Cl. 46-74.00D.

Bradley, Paul W. Display tray assembly. 4,239,308, Cl. 312-201.000.

Bradley, Rex L. Antibiotic testing method and apparatus having a channelized reservoir. 4,239,853, Cl. 435-33.000.

Bradshaw, John: *See*—
Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, 4,239,769, Cl. 424-274.000.

Braese, Hans-Eberhard; Fischer, Winfried; Hardt, Dietrich; Prinz, Richard; and Serini, Volker, to Bayer Aktiengesellschaft. Polyvinyl chloride-polycarbonate alloys. 4,239,861, Cl. 525-151.000.

Brajder, Antonio, to Siemens Aktiengesellschaft. Method and apparatus for driving a transistor operated in saturation. 4,239,989, Cl. 307-255.000.

Brakebill, Harold G., to Robertshaw Controls Company. Valve positioner and method of making the same. 4,239,181, Cl. 251-61.500.

Brand, Peter; Pinck, Peter; and Baier, Anton, to Hauni-Werke Korber & Co. KG. Apparatus for monitoring filter rod sections in filter tipping machines. 4,238,993, Cl. 131-21.00R.

Brandenstein, Manfred: *See*—
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,239,298, Cl. 308-6.00C.
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.

Brandt, Jurgen; Herold, Ludwig; Pikorz, Wolfgang; and Sonntag, Alois, to Licentia Patent-Verwaltungs-G.m.b.H. Semiconductor device plastic jacket having first and second annular sheet metal strips with corrugated outer edges embedded in said plastic jacket. 4,240,099, Cl. 357-79.000.

Bredeweg, Corwin J., to Dow Chemical Company, The. Process for the polymerization of acrylonitrile-butadiene-styrene resins. 4,239,863, Cl. 525-263.000.

Bredin, Bertil, to Aktiebolaget Bofors. Device for feeding channel for ammunition for automatic gun. 4,238,989, Cl. 89-33.0BB.

Breininger, J. Shannon; and Greenberg, Charles B., to PPG Industries, Inc. Organic additives for organometallic compositions. 4,239,816, Cl. 427-168.000.

Breitung, Edward J.; and Hickman, Ronald J., to Stewart-Warner Corporation. Cruise control switch assembly. 4,239,947, Cl. 200-61.890.

Bremner, Paul R.: *See*—
Eisele, Judith A.; Bauer, Donald J.; and Bremner, Paul R., 4,239,735, Cl. 423-126.000.

Brenis, Kenneth L.: *See*—
Rolls, James A.; and Brenis, Kenneth L., 4,239,679, Cl. 260-42.490.

Brennan, James A.; and Norris, Henry D., to Mobil Oil Corporation. Removal of organic chlorides from synthetic oils. 4,239,927, Cl. 585-24.000.

Brenner, Reeve R. Basketball shot making game with a multiplicity of backboard and hoop arrangements. 4,239,214, Cl. 273-1.50R.

Brent, Robert G., to Textron, Inc. Hydraulic piston rod seal. 4,239,244, Cl. 277-188.00R.

Bridges, Thomas L. Key-reminder automotive door locking system. 4,239,270, Cl. 292-347.000.

Brif, Leonid M.: *See*—
Brif, Viktor M.; and Brif, Leonid M., 4,239,713, Cl. 264-40.100.

Brif, Viktor M.; and Brif, Leonid M. Method and machine for expanding tubes in a tube wall. 4,239,713, Cl. 264-40.100.

Bringol, Charles R., to International Business Machines Corporation. Text processing and display system with means for rearranging the spatial format of a selectable section of displayed data. 4,240,075, Cl. 340 798.000.

Briska, Marian: *See*—
Alameddine, Oussama; Briska, Marian; and Thiel, Klaus P., 4,239,810, Cl. 427-75.000.

Broekhuizen, Willem; Gaffey, Troy M.; Joglekar, Mukund M.; and Neathery, William D., to Textron, Inc. Blade-mounted centrifugal pendulum. 4,239,455, Cl. 416-145.000.

Broekhuizen, Willem: *See*—
Joglekar, Mukund M.; Gaffey, Troy M.; Broekhuizen, Willem; and Neathery, William D., 4,239,456, Cl. 416-145.000.

Brois, Stanley J.; and Gutierrez, Antonio, to Exxon Research & Engineering Co. Thio-bis-(alkyl lactone acid esters) and thio-bis-(hydrocarbyl diacid esters) are useful additives for lubricating compositions. 4,239,636, Cl. 252-48.600.

Brois, Stanley J.: *See*—
Gutierrez, Antonio; and Brois, Stanley J., 4,239,633, Cl. 252-32.70E.

Broken Hill Proprietary Company Limited, The: *See*—
Skinner, David H.; and Brown, Jeffrey H., 4,239,156, Cl. 238-277.000.

Brooks & Perkins, Incorporated: *See*—
Stamm, Robert H.; and Krause, Fred E., 4,238,878, Cl. 29-421.00R.

Brooks, Richard J.; and Marson, Thomas W., to Chemithon Corporation, The. Solar heating method. 4,239,035, Cl. 126-452.000.

Brown, Asa V., Jr.: *See*—
Williams, John L.; and Brown, Asa V., Jr., 4,239,099, Cl. 193-32.000.

Brown, Bernard J. Method and apparatus for controlling the grinding of workpieces. 4,238,886, Cl. 33-149.00J.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Hartmann, Bernd; and Kleinschmager, Herbert, 4,239,837, Cl. 429-104.000.

Brown, Clifford R.: *See*—
Norman, Benjamin F. J.; and Brown, Clifford R., 4,239,228, Cl. 273-189.00R.

Brown, Herman, to Finetex Incorporated. Cationic surfactant compositions compatible with anionic surfactants. 4,239,631, Cl. 252-8.750.

Brown, Hughie A., Jr.; and Walker, Joe L., to Vought Corporation. Visual simulator projection system. 4,239,355, Cl. 353-87.000.

Brown, Jeffrey H.: *See*—
Skinner, David H.; and Brown, Jeffrey H., 4,239,156, Cl. 238-277.000.

Brown, Kenneth: *See*—
Cairns, Hugh; Brown, Kenneth; and Altouyan, Roger E. C., 4,239,748, Cl. 424-45.000.

Brown, Timothy M.: *See*—
Hartman, Seymour; and Brown, Timothy M., 4,239,577, Cl. 156-312.000.

Brownlee, Sherwood S.; Grubb, Frederick H., Jr.; and Lohr, Warren G., to Acme Visible Records, Inc. Sub-assemblies for rotary storage cabinet. 4,239,311, Cl. 312-305.000.

Bruzzone, Mario: *See*—
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, 4,239,873, Cl. 526-114.000.

Brzeski, Andrzej: *See*—
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Bub, Oskar, to Knoll AG. 1,5'-Benzodiazepine-2-ones, pharmaceutical compositions thereof and method of use thereof. 4,239,684, Cl. 424-244.000.

Buchanan, Thomas M., to United States of America, America. *Neisseria gonorrhoeae* vaccine. 4,239,749, Cl. 424-92.000.

Buchel, Karl: *See*—
Regel, Erik; Buchel, Karl; Haller, Ingo; and Plempel, Manfred, 4,239,765, Cl. 424-269.000.

Buchel, Karl H.; Kramer, Wolfgang; and Plempel, Manfred, to Bayer Aktiengesellschaft. Antimycotic diaryloxy-imidazolyl-O,N-acetals. 4,239,767, Cl. 424-273.00R.

Buchel, Karl H.: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Kuhle, Engelbert; Frohberger, Paul-Ernst; and Beandes, Wilhelm, 4,239,766, Cl. 424-269.000.

Budich, Wolfgang: *See*—
Aust, Heinrich; Budich, Wolfgang; Nowak, Heinz; and Primessing, Franz, 4,239,574, Cl. 156-267.000.

Buffalo Forge Company: *See*—
Geitner, Lawrence J.; and Herbeck, Christian C., 4,239,450, Cl. 415-160.000.

Buhrer, Carl F., to GTE Laboratories Incorporated. Electrodeless fluorescent light source having reduced far field electromagnetic radiation levels. 4,240,010, Cl. 315-248.000.

Bunce, Donald A., to White Consolidated Industries, Inc. Formed metal panels. 4,238,908, Cl. 49-501.000.

Bunker Ramo Corporation: *See*—
Anderson, Norman R.; and Tomsa, Vladimir, 4,239,314, Cl. 339-89.00M.
Bauer, Erhard, 4,239,321, Cl. 339-276.00T.
Hesse, David L.; and Warywoda, Joseph, 4,239,317, Cl. 339-91.00R.
Hesse, David L.; Krolak, Ronald F.; and Perna, Jiulio E., 4,239,320, Cl. 339-154.00A.
Spaulding, Tedford H., 4,239,316, Cl. 339-91.00R.

Burgdorf, Jochen, to ITT Industries, Inc. Motorcycle hydraulic brake system with brake force regulator. 4,239,294, Cl. 303-6.00C.

Burns Double Split, Inc.: *See*—
Burns, Thomas H., 4,239,070, Cl. 144-193.00A.

Burns, Thomas H., to Burns Double Split, Inc. Log splitter. 4,239,070, Cl. 144-193.00A.

Burns, William G. Pipe union and seal. 4,239,242, Cl. 277-153.000.

Burnside, Walter M., to Bally Manufacturing Corporation. Rotatable disc stop apparatus. 4,239,225, Cl. 273-143.00R.

Burris, Frank H. Fold-up trailer assembly. 4,239,258, Cl. 280-639.000.

Burroughs Corporation: *See*—
Besemer, John O.; and Bellamy, Clifford J., 4,240,143, Cl. 364-200.000.

Burstell, Helmut: *See*—
Heubach, Gunther; Sachse, Burkhard; and Burstell, Helmut, 4,239,525, Cl. 71-92.000.

Busch, Hans-Walter: *See*—
Busse, Fritz; Busch, Hans-Walter; and Michelatsch, Peter, 4,238,945, Cl. 72-150.000.

Buschsieper, Peter: *See*—
Hergt, Peter; Buschsieper, Peter; and Matthias, Heinz-Bernd, 4,239,453, Cl. 415-182.000.

Busse, Fritz; Busch, Hans-Walter; and Michelatsch, Peter, to Schwarze, Rigobert. Apparatus for bending a jacketed tube. 4,238,945, Cl. 72-150.000.

Byers, Thomas L., to Central Sales Promotions, Inc. Two faced display holder. 4,238,897, Cl. 40-16.200.

Byk Gulden Lomberg Chemische Fabrik GmbH: *See*—
Rainer, Georg, 4,239,901, Cl. 560-34.000.

C. A. Weidmuller KG: *See*—
Stenz, Paul P., 4,239,324, Cl. 339-198.00G.

C.P. Chemical Company, Inc.: *See*—
Hasselman, Walter, Jr., 4,239,881, Cl. 528-164.000.

Cablecraft, Inc.: *See*—
Fawcett, Harry E., 4,238,974, Cl. 74-501.00R.

Cadet, Jean-Claude A. M.: *See*—
Hullein, Francois M. L.; and Cadet, Jean-Claude A. M., 4,240,069, Cl. 340-347.00P.

Cadwell, Ronald G.: *See*—
Monigold, Larry E.; and Cadwell, Ronald G., 4,239,153, Cl. 236-86.000.

Cairns, Hugh; Brown, Kenneth; and Altouyan, Roger E. C., to Fisons Limited. Inorganic salts of 2,8-dicarboxy-4,6-dioxo-10-propyl-4H,6H-benzo(1,2-b:5,4-b')dipyran useful for the treatment of asthma and hay fever. 4,239,748, Cl. 424-45.000.

Callaghan, Vincent M.: *See*—
Bevilacqua, Frank; Callaghan, Vincent M.; and Van Fleet, James L., 4,239,596, Cl. 176-37.000.

Callicoatte, Jerry D., to Texas Plastics Industries, Inc. Method and apparatus for protecting pipe threads. 4,239,062, Cl. 138-96.00R.

Camco, Incorporated: *See*—
Terral, Ben D., 4,239,082, Cl. 166-117.500.

Camp, Albert T.; Csanady, Elmer R.; and Mosher, Paul R., to United States of America, Navy. Plateau propellant compositions. 4,239,561, Cl. 149-19.800.

Camp, Donald A.: *See*—
Rabinowitz, Charles M.; and Camp, Donald A., 4,240,047, Cl. 331-154.000.

Campbell, Gerald A.: *See*—
Archie, William C., Jr.; and Campbell, Gerald A., 4,239,847, Cl. 430-213.000.

Campbell, Grover R.; and Hobbs, James W., to Phillips Petroleum Company. Fractionator feed tank pressure control. 4,239,517, Cl. 62-37.000.

Campbell, Joe C.; Lau, Kam-Yin; and Stone, Julian, to Bell Telephone Laboratories, Incorporated. Magneto-optic modulator using dielectric mirrors. 4,239,337, Cl. 350-151.000.

Campbell, John E.: *See*—
Hughes, Paul R.; and Campbell, John E., 4,240,077, Cl. 340-500.000.

Campbell, Scott, to Energy Conservation Unlimited, Inc. Waste heat recovery system controller. 4,238,931, Cl. 62-183.000.

Campolmi, Stefano; Felicioli, Maria G.; Carletti, Vittorio; and Santi, Roberto, to Montedison S.p.A. Process for preparing 2-(6'-methoxy-2'-naphthyl)-propionic acid. 4,239,914, Cl. 562-466.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Ward, Frederick D., 4,239,234, Cl. 273-391.000.

Canadian Fram Limited: *See*—
De Jong, Allen W., 4,239,095, Cl. 192-84.00T.

Cannon, Robert E., to Textron, Inc. Slide fastener installation. 4,238,871, Cl. 24-205.11R.

Canon Kabushiki Kaisha: *See*—
Shimizu, Masami; Hashimoto, Teiji; Miyakawa, Hideaki; Uchidoi, Masanori; Aizawa, Hiroshi; and Ito, Tadashi, 4,240,055, Cl. 335-234.000.

Carletti, Vittorio: *See*—
Campolmi, Stefano; Felicioli, Maria G.; Carletti, Vittorio; and Santi, Roberto, 4,239,914, Cl. 562-466.000.

Carlson, Russell R.; and Tschetter, John J. Belt drive for pump jack. 4,238,966, Cl. 74-41.000.

Carney, Ronald E.; Devault, Robert L.; McAlpine, James B.; and Sinclair, Arthur C., to Abbott Laboratories. O-Demethylseldomycin factor 5 derivatives. 4,239,752, Cl. 424-180.000.

Carpenter, Robert L.: *See*—
Bateman, Jess R.; Carpenter, Robert L.; and Smith, Ross K., 4,240,030, Cl. 324-110.000.

Carr, Timothy W.; Corl, Edwin A.; and Majtenyi, Carl G., to International Business Machines Corporation. Trace water measurement. 4,239,967, Cl. 250-281.000.

Carrier Corporation: *See*—
Pratap, Prem, 4,239,186, Cl. 251-255.000.

Carrieri, Louis F.; and Spanke, Edwin A., to Gulf & Western Manufacturing Company. Bolster arrangement for opposed slide double acting press. 4,238,950, Cl. 72-446.000.

Carter, Willis M., to University of Kentucky Research Foundation, The. Bevolute gear system. 4,238,970, Cl. 74-457.000.

Cason, Charles M., III; Perkins, James F.; and Jones, Robert W., to United States of America, Army. Unstable optical resonators with tilted spherical mirrors. 4,239,341, Cl. 350-294.000.

Castel, Yvon; and Cholet, Henri, to Institut Francais du Petrole. Drill bit with suction jet means. 4,239,087, Cl. 175-340.000.

Caterpillar Tractor Co.: *See*—
Lanz, William E.; and Stepe, Visvaldis A., 4,238,896, Cl. 37-141.00R.
Livesay, Richard E., 4,239,297, Cl. 305-11.000.

Cathers, William P.; and Dorn, Charles W., Jr., to PPG Industries, Inc. Apparatus for handling flexible sheet while applying graded shade band thereon. 4,239,016, Cl. 118-624.000.

Celotex Corporation, The: *See*—
Benjamin, Delmar E., 4,239,310, Cl. 312-227.000.

Central Sales Promotions, Inc.: *See*—
Byers, Thomas L., 4,238,897, Cl. 40-16.200.

Cerwin Vega, Inc.: *See*—
Czerwinski, Eugene J., 4,239,943, Cl. 179-115.5VC.

Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, to Snamprogetti. Process for the polymerization of alpha-olefins, catalyst employed in said process and method for the preparation thereof. 4,239,873, Cl. 526-114.000.

Chai, Bong J.; and Muggee, Fred D., to Magna Corporation. Method of preparing phosphonates from nitriles. 4,239,695, Cl. 260-502.500.

Champion International Corporation: *See*—
Hartman, Seymour; and Brown, Timothy M., 4,239,577, Cl. 156-312.000.
Roccaforte, Harry I.; and Sherwood, Irvin W., 4,239,104, Cl. 206-45.330.
Sorenson, John F.; and Locke, Frank W., 4,239,148, Cl. 229-36.000.
Vincent, David N.; and Golden, Ronald, 4,239,646, Cl. 252-316.000.

Chan, Yuk-Charn: *See*—
Antrim, Richard L.; Chan, Yuk-Charn; Crary, John R., Jr.; and Harris, Donald W., 4,239,906, Cl. 536-56.000.

Chandavoine, Marie-Madeleine: *See*—
Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Fillain, Paul de C., 4,239,893, Cl. 546-321.000.

Chandler, Christopher W.: *See*—
Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased, 4,239,823, Cl. 427-420.000.
Chandler, William B.; Davis, John D.; and Sergeant, Ronald G., to AMP Incorporated. Tooling with stepping motor drive. 4,238,874, Cl. 29-33.00M.
Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, to International Business Machines Corporation. Molecular-beam epitaxy system and method including hydrogen treatment. 4,239,584, Cl. 156-612.000.
Chang, Leroy L.: *See*—
Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, 4,239,584, Cl. 156-612.000.
Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., to General Electric Company. Open tube aluminum oxide disc diffusion. 4,239,560, Cl. 148-189.000.
Chapuis, Maurice; and Machat, Jean-Yves, to Compagnie Generale des Etablissements Michelin. Membrane contactor. 4,239,979, Cl. 307-118.000.
Charles Stark Draper Laboratory, Inc., The: *See*—
Smith, T. Basil; Howatt, John R.; and McKenna, John F., Jr., 4,239,982, Cl. 307-219.000.
Charm, Stanley E., to Penicillin Assays, Inc. Antibiotic detection method. 4,239,745, Cl. 424-1.000.
Charm, Stanley E., to Penicillin Assays, Inc. Antibiotic detection method. 4,239,852, Cl. 435-32.000.
Chase, Paul W.: *See*—
Sniezek, Joseph T.; Chase, Paul W.; and Miller, Wendell D., 4,238,956, Cl. 73-861.010.
Chautard, Jean; and Chemizard, Andre, to Compagnie Generale des Etablissements Michelin. Pneumatic tire with puncture-sealing lining comprising vulcanizable and vulcanizing layers. 4,239,076, Cl. 152-347.000.
Chauvel, Gerard, to Texas Instruments Incorporated. System for direct access to a memory associated with a microprocessor. 4,240,138, Cl. 364-200.000.
Check, Frank T.; and Schubert, Keith E., to Pitney Bowes Inc. Scale with weight-to-period transducer. 4,239,088, Cl. 177-210.0FP.
Chemetal Corporation: *See*—
Holzl, Robert A., 4,239,819, Cl. 427-255.200.
Chemische Werke Huls AG: *See*—
Feldmann, Rainer; and Gorke, Klaus, 4,239,807, Cl. 428-462.000.
Chemithon Corporation, The: *See*—
Brooks, Richard J.; and Marson, Thomas W., 4,239,035, Cl. 126-452.000.
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Chautard, Jean; and Chemizard, Andre, 4,239,076, Cl. 152-347.000.
Chen, Sow-Mei L.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,899, Cl. 556-438.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,900, Cl. 556-438.000.
Chevron Research Company: *See*—
Blanton, William A., Jr., 4,239,742, Cl. 423-563.000.
Pearce, James C., 4,239,418, Cl. 405-211.000.
Chiang, Chih-Chang. Luggage lock. 4,239,269, Cl. 292-175.000.
Chiappetti, Arthur B. Energy producing system. 4,239,975, Cl. 290-1.00R.
Chicago Bridge & Iron Company: *See*—
Laverman, Royce J., 4,238,953, Cl. 73-40.700.
Chinoin Gyogyszer: *See*—
Bodnar, Janos; and Lugosi, Gyorgy, 4,239,653, Cl. 252-447.000.
Chiola, Vincent: *See*—
Faria, Sixdeniel; and Chiola, Vincent, 4,239,844, Cl. 430-67.000.
Chisso Corporation: *See*—
Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, 4,239,865, Cl. 525-327.000.
Chiyoda Chemical Engineering & Construction Co., Ltd.: *See*—
Yanagioka, Hiroshi; Futami, Atsushi; Shinsenji, Masatake; and Tanaka, Minoru, 4,239,515, Cl. 55-223.000.
Chmyz, George: *See*—
Anderson, Marvin H.; Chmyz, George; Daus, Carl D.; and Kneip, George D., Jr., 4,240,033, Cl. 324-321.000.
Cho, Alfred Y., to Bell Telephone Laboratories, Incorporated. Effusion cells for molecular beam epitaxy apparatus. 4,239,955, Cl. 219-271.000.
Choay, S.A.: *See*—
Sache, Edgar; and Bertrand, Henri, 4,239,754, Cl. 424-183.000.
Choi, Charles K., to Occidental Petroleum Corporation. Process for stripping oil from fluidized ash and char particles to prepare the particles for decarbonization. 4,239,599, Cl. 201-2.500.
Cholet, Henri: *See*—
Castel, Yvon; and Cholet, Henri, 4,239,087, Cl. 175-340.000.
Chow, Kuen: *See*—
Braatz, Paul O.; Chow, Kuen; and Grinberg, Jan, 4,239,347, Cl. 350-336.000.
Christian, Glen H. Roll holder friction brake. 4,239,163, Cl. 242-55.200.
Christiansen, David W., to Babcock & Wilcox Company, The. Nuclear fuel spacer grid. 4,239,597, Cl. 176-78.000.
Ciba-Geigy AG: *See*—
Moore, Michael H., 4,239,386, Cl. 355-77.000.
Turner, George F. A. M., 4,239,202, Cl. 271-18.000.
Ciba-Geigy Corporation: *See*—
Darms, Roland, 4,239,880, Cl. 528-125.000.
Falk, Robert A., 4,239,915, Cl. 562-481.000.
Marshall, Alan; and Richardson, Norman, 4,239,648, Cl. 252-389.00A.
Ciliberti, David F.: *See*—
Harvey, Francis J., II; Ciliberti, David F.; Meyer, Thomas N.; and Fey, Maurice G., 4,239,740, Cl. 423-350.000.
Cincinnati Milacron Inc.: *See*—
Rieder, Walter E., 4,239,635, Cl. 252-34.000.
Cinquemani, Robert, to Aquatic Diet Technology Inc. Fish food composition and a process for enhancing the color of fish. 4,239,782, Cl. 426-2.000.
Ciszek, Theodore F., to International Business Machines Corporation. Method and apparatus for forming silicon crystalline bodies. 4,239,734, Cl. 422-246.000.
Citizen Watch Co., Ltd.: *See*—
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,240,150, Cl. 364-705.000.
Kashima, Yoshinobu; and Yoshida, Makoto, 4,240,021, Cl. 320-2.000.
Sekine, Mitsuo, 4,240,154, Cl. 368-72.000.
Clancey, James T., to Conoco, Inc. Flushing fluid for centrifugal pumps used in the pipelining of slurries. 4,239,422, Cl. 406-47.000.
Clark, David J.: *See*—
Fahlen, Theodore S.; and Clark, David J., 4,240,044, Cl. 331-94.5PE.
Clark, Harold A.; and Haluska, Loren A., to Dow Corning Corporation. Organothiol-containing siloxane resins. 4,239,668, Cl. 260-29.20M.
Claudius Peters AG: *See*—
Krauss, Werner, 4,239,421, Cl. 406-12.000.
Clayton Dewandre Company Limited: *See*—
Page, Wilbur M., 4,239,293, Cl. 303-6.00M.
Clements, John A., to Technicon Instruments Corporation. Phase separator for continuous-flow analytical systems. 4,239,494, Cl. 23-230.00R.
Cline, Harvey E.; Anthony, Thomas R.; and Solomon, Harvey D., to General Electric Company. Sensitized stainless steel having integral normalized surface region. 4,239,556, Cl. 148-38.000.
Clitherow, John W.: *See*—
Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, 4,239,769, Cl. 424-274.000.
Clovis, James S.: *See*—
Rock, Steven L.; and Clovis, James S., 4,239,508, Cl. 55-50.000.
Coaltex, Incorporated: *See*—
Justice, James C.; and Delli-Gatti, Frank A., 4,239,289, Cl. 299-18.000.
Cobb, A. Lawrence, to Composite Technology Corporation. Method for making a composite structure. 4,239,571, Cl. 156-196.000.
Cobe Laboratories, Inc.: *See*—
Hlavinka, Dennis J., 4,239,625, Cl. 210-321.300.
Cochran, Joseph W., to ComCo. Gas cycle fluid energy process for forming coal-in-oil mixtures. 4,239,496, Cl. 44-51.000.
Cohen, Ellis, to Dunlop Limited. Devices for the measurement of the physical state of a pneumatic tire. 4,240,061, Cl. 340-58.000.
Cohen, Howard S. Adhesive bonding of hook and loop type fabric surfaces. 4,239,829, Cl. 428-86.000.
Coker, George M., Jr: *See*—
Lessner, David L.; Macemon, James H.; Coker, George M., Jr; and Hodgson, Charles E., 4,239,391, Cl. 356-318.000.
Coleman, Clyde F.; and Torrington, Leslie A., to RCA Corporation. Video disc caddy. 4,239,108, Cl. 206-312.000.
Coleman, Clyde F., to RCA Corporation. Record extracting mechanism for caddy type video disc player. 4,239,238, Cl. 274-9.00B.
Coleman, Robert L., to Westinghouse Electric Corp. Ultrasonic transducer with chemical-setting inorganic cement backing for operation at high temperatures. 4,240,004, Cl. 310-327.000.
Colista, Dominic: *See*—
Johnston, Robert J.; Colista, Dominic; Layciak, Stephen G.; and Dobrosielski, Stephen S., 4,239,946, Cl. 200-51.130.
Collard, Louis-Jean. Floating electric generator using the driving energy of water. 4,239,976, Cl. 290-42.000.
Collins, Charles G., to Shell Oil Company. Method for producing catalyst pellets of uniform size. 4,239,140, Cl. 225-4.000.
Colonna des Princes, Louis. Retaining device for an obstacle rail. 4,239,168, Cl. 248-293.000.
Columbia Machine, Inc.: *See*—
Hanson, Edward W., 4,239,433, Cl. 414-84.000.
Combustion Engineering, Inc.: *See*—
Bevilacqua, Frank; Callaghan, Vincent M.; and Van Fleet, James L., 4,239,596, Cl. 176-37.000.
Waryasz, Richard E., 4,238,923, Cl. 60-39.120.
ComCo: *See*—
Cochran, Joseph W., 4,239,496, Cl. 44-51.000.
Commonwealth Industrial Gases Limited, The: *See*—
Holmes, Ronald W., 4,239,038, Cl. 128-205.130.
Commonwealth Scientific and Industrial Research Organization: *See*—
Bailey, Frank P.; and Coogan, Clive K., 4,238,957, Cl. 73-343.00R.
Compagnie due Roneo and Fluidelec: *See*—
Thibonnier, Jacques; Douard, Pierre-Rene; and Thepot, Jean M. L., 4,239,420, Cl. 406-2.000.
Compagnie Generale des Etablissements Michelin: *See*—
Chapuis, Maurice; and Machat, Jean-Yves, 4,239,979, Cl. 307-118.000.
Chautard, Jean; and Chemizard, Andre, 4,239,076, Cl. 152-347.000.
Composite Technology Corporation: *See*—
Cobb, A. Lawrence, 4,239,571, Cl. 156-196.000.

Conant, Roger P.; and Duffy, Raymond G., to Laminating & Coating Corporation. Flexible pouch with cross-oriented puncture guard. 4,239,111, Cl. 206-484.000.

Condor Engineering & Manufacturing, Inc.: *See*—
Arribau, Jorge O.; and Dorn, Russell J., 4,239,396, Cl. 366-2.000.

Conlon, Edward B., to Baltek Corporation. Lightweight railway car hatch cover. 4,239,008, Cl. 105-377.000.

Conoco, Inc.: *See*—
Clancey, James T., 4,239,422, Cl. 406-47.000.
McClaflin, Gifford G., 4,239,052, Cl. 137-13.000.
Yang, Kang, 4,239,917, Cl. 568-618.000.

Containaire, Inc.: *See*—
Mueller, John J.; and Beall, Glenn L., 4,239,132, Cl. 222-212.000.

Container Corporation of America: *See*—
Dunsmoor, Earl W., Jr., 4,239,593, Cl. 162-303.000.
Gardner, Jeffrey M., 4,239,147, Cl. 229-15.000.

Continental Group, Inc., The: *See*—
Swaroop, Nareshwar, 4,239,471, Cl. 425-144.000.

Continental Oil Company: *See*—
Dudt, Philip J., 4,239,718, Cl. 264-117.000.

Contreras, Robert L.: *See*—
Monroe, Gary S.; Contreras, Robert L.; and Hummel, Gregory C., 4,238,876, Cl. 29-401.100.

Coogan, Clive K.: *See*—
Bailey, Frank P.; and Coogan, Clive K., 4,238,957, Cl. 73-343.00R.

Cook, Charles F.: *See*—
Hays, George E.; and Cook, Charles F., 4,239,510, Cl. 55-68.000.

Cook, Robert L. Device for conversion of centrifugal force to linear force and motion. 4,238,968, Cl. 74-84.00R.

Coombs, Murray. Energy conserving vapor compression air conditioning system. 4,238,933, Cl. 62-238.00E.

Cooper Industries, Inc.: *See*—
Boynton, Kenneth G., 4,239,812, Cl. 427-96.000.

Copeland Corporation: *See*—
Elson, John P., 4,239,461, Cl. 417-312.000.

Copp, David H.: *See*—
Blahut, Donald E.; Copp, David H.; and Stanzione, Daniel C., 4,240,142, Cl. 364-200.000.

Corbett, Gerald L. Rigging sling with separator. 4,239,272, Cl. 294-74.000.

Corey, Robert L., to Unarco Industries, Inc. Package flow system. 4,239,100, Cl. 193-35.00R.

Corl, Edwin A.: *See*—
Carr, Timothy W.; Corl, Edwin A.; and Majtenyi, Carl G., 4,239,967, Cl. 250-281.000.

Cornell, Richard H., to United States of America, Air Force. Fuel flow distribution system. 4,239,053, Cl. 137-110.000.

Corning Glass Works: *See*—
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,239,519, Cl. 65-2.000.
Beall, George H., 4,239,521, Cl. 65-33.000.
Borrelli, Nicholas F.; and Young, Peter L., 4,239,338, Cl. 350-155.000.
Grossman, David G., 4,239,520, Cl. 65-33.000.

Coronelli, Carolina; Beretta, Grazia; Bardone, Maria R.; and Parenti, Francesco, to Gruppo Lepetit S.p.A. Antibiotic substances. 4,239,751, Cl. 424-118.000.

Coty, Vernon F.: *See*—
Doll, Brian E.; Coty, Vernon F.; and Lifland, Philip P., 4,239,620, Cl. 210-601.000.

Couch, Robert D., Jr.: *See*—
Oates, Robert M.; Neuner, James A.; Couch, Robert D., Jr.; and Kasinoff, Alan M., 4,239,595, Cl. 176-19.00R.

Coulter Systems Corp.: *See*—
Kuehnle, Manfred R., 4,240,125, Cl. 361-230.000.

Coursen, David L., to Du Pont de Nemours, E. I., and Company. In situ leaching of ore bodies. 4,239,286, Cl. 299-4.000.

CP Test Services-Valvco, Inc.: *See*—
Shope, Thomas, 4,239,056, Cl. 137-370.000.

Crane Packing Limited: *See*—
Wilkinson, Samuel C. W., 4,239,240, Cl. 277-84.000.

Crary, John R., Jr.: *See*—
Antrim, Richard L.; Chan, Yuk-Charn; Crary, John R., Jr.; and Harris, Donald W., 4,239,906, Cl. 536-56.000.

Crivello, James V., to General Electric Company. Low temperature curable organic resin compositions. 4,239,725, Cl. 264-328.600.

Crookshanks, Rex J., to Ampex Corporation. Fast semiconductor digital logic inverter gate. 4,239,981, Cl. 307-214.000.

Croop, Edward J.: *See*—
Dixon, George D.; and Croop, Edward J., 4,239,077, Cl. 156-272.000.

Cross, Peter E.: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,239,779, Cl. 424-317.000.

Crossin, John P.: *See*—
Boudreau, Ronald B.; and Crossin, John P., 4,239,255, Cl. 280-605.000.

Crossley, Rolland S. Game board apparatus. 4,239,229, Cl. 273-255.000.

Csanady, Elmer R.: *See*—
Camp, Albert T.; Csanady, Elmer R.; and Mosher, Paul R., 4,239,561, Cl. 149-19.800.

Cucinella, Salvatore: *See*—
Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, 4,239,692, Cl. 260-448.00R.

Culver, Richard B.: *See*—
Oliver, Donald W.; and Culver, Richard B., 4,239,965, Cl. 250-270.000.

Cunningham, Emmett M., to Plastics, Inc. Portable turntable for microwave oven. 4,239,009, Cl. 108-20.000.

Cunningham, James R., to Matthey Bishop Incorporated. Metal substrate formation with torx recess mandrel. 4,239,834, Cl. 428-592.000.

Cunningham, Leroy G. Fishing pole eye. 4,238,900, Cl. 43-24.000.

Curchod, Donald B., to American Fitness, Inc. Punching bag simulator. 4,239,209, Cl. 272-76.000.

Curtis, George C.; McInturff, Joe A.; Rubel, Herbert J.; and Wall, William F., to Lockheed Corporation. Means for balancing rotors of a machine. 4,238,960, Cl. 73-462.000.

Curtis, Joel E.; and Hall, Thornton D., to Gold Kist, Inc. Method and apparatus for field-drying harvested crops. 4,238,890, Cl. 34-22.000.

Cushman, Robert H., to Pennwalt Corporation. Simultaneously displaying varying tomographic images of dental arch with single panoramic X-ray exposure. 4,239,971, Cl. 250-439.00P.

Czerwinski, Eugene J., to Cerwin Vega, Inc. Adjustable dual spider for a loudspeaker. 4,239,943, Cl. 179-115.5VC.

Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, to Klein, Schanzlin & Becker Aktiengesellschaft. Heat barrier for motor-pump aggregates. 4,239,462, Cl. 417-373.000.

Dahl, Klaus J., to Raychem Corporation. Process for isolation of solid polymers. 4,239,884, Cl. 528-486.000.

Dahlquist, Jon G. High accuracy bass reproducer device. 4,239,090, Cl. 181-172.000.

Daigle, Donald J.: *See*—
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,239,701, Cl. 564-15.000.

Daiichi Seiyaku Co., Ltd.: *See*—
Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, 4,239,903, Cl. 560-73.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Tomita, Yukio; and Nishio, Taketaro, 4,239,379, Cl. 355-52.000.

Daitoku, Koichi, to Nippon Kogaku K.K. Power-driven rewind device of a camera. 4,239,166, Cl. 242-71.600.

Daks, Mark L.; Meslener, George J.; and Stone, Samuel M., to GTE Laboratories Incorporated. Non-twist eccentric coupler. 4,239,333, Cl. 350-96.210.

D'Amico, John J.; and Schafer, David E., to Monsanto Company. 2-(Pyridylthio)pyridine-N-oxides. 4,239,527, Cl. 71-94.000.

Dana Corporation: *See*—
Janson, Gunnar H., 4,239,092, Cl. 188-267.000.

Danilewicz, John C.: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,239,779, Cl. 424-317.000.

Danziger, Harry; and Kaiser, Bernd-Ulrich, to Bayer Aktiengesellschaft. Purification of caprolactam. 4,239,682, Cl. 260-239.30A.

Darms, Roland, to Ciba-Geigy Corporation. Aromatic diamines and their use as polycondensation components for the manufacture of polyamide, polyamide-imide and polyimide polymers. 4,239,880, Cl. 528-125.000.

Dataproducts Corporation: *See*—
Van Horne, Arthur C.; and Young, James E., 4,239,405, Cl. 400-616.100.

Daum, Gerhard: *See*—
Bernhardt, Gunther; and Daum, Gerhard, 4,239,703, Cl. 568-431.000.

Daus, Carl D.: *See*—
Anderson, Marvin H.; Chmyz, George; Daus, Carl D.; and Kneip, George D., Jr., 4,240,033, Cl. 324-321.000.

Davini, Giorgio, to Basfer S.r.L. Light-weight program controller. 4,239,431, Cl. 414-1.000.

Davis, John D.: *See*—
Chandler, William B.; Davis, John D.; and Sergeant, Ronald G., 4,238,874, Cl. 29-33.00M.

Davis, Leighton I. Athletic swing training device and method. 4,239,227, Cl. 273-186.00A.

Davis, Lorne A., Jr., to Texaco Inc. Means and method for determining water saturation of oil. 4,240,028, Cl. 324-61.00R.

Dawless, Robert K.; and Jacobs, Stanley C., to Aluminum Company of America. Production of extreme purity aluminum. 4,239,606, Cl. 204-67.000.

Day, Edward A.; Seay, Glenn E.; and Ritter, Perry B., to Systems, Science & Software. Delay detonator device. 4,239,004, Cl. 102-28.00R.

Dayco Corporation: *See*—
Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased, 4,239,823, Cl. 427-420.000.
Howerton, Anderson W., 4,239,566, Cl. 156-137.000.
Kleykamp, Donald L.; and Neroni, Peter J., 4,239,007, Cl. 105-225.000.
McLean, Michael E., 4,239,562, Cl. 156-64.000.
McLean, Michael E.; Ensley, Rufus N.; Haren, Doyle V.; and Alcaraz, Anthony J., 4,239,821, Cl. 427-358.000.

Debaise, Michel J., to Hainaut-Sambre Societe Anonyme. Tuyere for the bottom of a steelworks converter. 4,239,194, Cl. 266-270.000.

Decher, Friedrich; and Bachorz, Gunther, to Hermann SCHWABE, Firma. Inductive element construction, particularly fluorescent lamp ballast. 4,240,057, Cl. 336-165.000.

Decker, Marvin G.: *See—*
Barnsbee, Clive D.; and Decker, Marvin G., 4,239,164, Cl. 242-55.530.

Decker, Thomas A.: *See—*
Williams, Robert E.; Decker, Thomas A.; Kurtzman, Charles; and Kuether, Christian L., 4,239,351, Cl. 351-36.000.

DeFilipps, Fred A.; Lipper, Roy O.; Winters, Luther R., Jr.; Nordstrom, Larry A.; and Szechy, Daniel J., to Scope Data Incorporated. Paper management system for a printing device. 4,239,404, Cl. 400-613.000.

de Fillain, Paul de C.: *See—*
Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Fillain Paul de C., 4,239,893, Cl. 546-321.000.

De Fouw, Eugene A.; and Baker, Peter M., to Lear Siegler, Inc. Filing cabinet including drawer interlock. 4,239,309, Cl. 312-221.000.

deJong, Aaldert J.; and Heijmen, Hendricus J., to Shell Oil Company. Linalool from dimethyloctadiene via epoxide and cyclooctenol. 4,239,923, Cl. 568-875.000.

De Jong, Allen W., to Canadian Fram Limited. Slip band electromechanical clutch. 4,239,095, Cl. 192-84.00T.

Del Conte, Maria L., to Farmatis, S.p.A. Process for preparing 6-isobornyl-3,4-xylenol. 4,239,920, Cl. 568-734.000.

Delle-Alsthom: *See—*
Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, 4,239,180, Cl. 251-51.000.

Delli-Gatti, Frank A.: *See—*
Justice, James C.; and Delli-Gatti, Frank A., 4,239,289, Cl. 299-18.000.

Denay, Andre M. J., to Societe Herve & Fils S.A. Continuous assemblies of postal correspondence units. 4,239,114, Cl. 206-610.000.

Dennison Manufacturing Company: *See—*
Devitt, Edmund B., 4,240,081, Cl. 346-75.000.

Denton, Dennis N.: *See—*
Bainard, Dean R.; and Denton, Dennis N., 4,239,243, Cl. 277-153.000.

DePaul, Harry V.; and Panchak, John R., to Air Products and Chemicals, Inc. Stabilization of halogenated polyols for polyurethane production. 4,239,642, Cl. 252-182.000.

DeSantis, John. Display stand. 4,239,169, Cl. 248-412.000.

DeSimone, Salvatore: *See—*
Barouh, Victor; Rottmann, George; and DeSimone, Salvatore, 4,239,832, Cl. 428-539.000.

DeSoto, Inc.: *See—*
Marek, Emanuel F.; and Migdal, Alex H., 4,239,541, Cl. 106-15.050.

Detectors, Inc.: *See—*
Rubey, Ulyss R., 4,239,014, Cl. 116-203.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Schuster, Rolf, 4,239,484, Cl. 432-77.000.

Deutsche Texaco Aktiengesellschaft: *See—*
Helbig, Klaus; and Rietsch, Eike, 4,240,070, Cl. 340-347.0DA.

Devault, Robert L.: *See—*
Carney, Ronald E.; Devault, Robert L.; McAlpine, James B.; and Sinclair, Arthur C., 4,239,752, Cl. 424-180.000.

DevChoudhury, Rathindra N., to NCR Corporation. Power limiting circuit for bar code reader. 4,240,064, Cl. 340-146.3AG.

Develop Dr. Eisbein GmbH & Co.: *See—*
Eisbein, Jurgen; and Wegmann, Helmut, 4,239,375, Cl. 355-16.000.

Devitt, Edmund B., to Dennison Manufacturing Company. Ink jet printing. 4,240,081, Cl. 346-75.000.

Devos, Gaston. Universal homokinetic joint. 4,238,936, Cl. 64-21.000.

DeVries, Wayne J.: *See—*
Hildebrandt, Eugene F.; Ottersbach, Thomas V.; and DeVries, Wayne J., 4,240,001, Cl. 310-68.00E.

deWitt, Paolo; and Tinti, Maria O., to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Process for preparing aromatic aldehydes and alcohols. 4,239,702, Cl. 568-435.000.

Diamond International Corporation: *See—*
Harvey, Albert J., 4,239,569, Cl. 156-156.000.

Diamond Shamrock Corporation: *See—*
Rolls, James A.; and Brenis, Kenneth L., 4,239,679, Cl. 260-42.490.

Dick, David C.; and Hurt, James M., Jr., to Texas Utilities Services, Inc. Absorber tower maintenance isolation system. 4,239,711, Cl. 261-109.000.

Dickey-john Corporation: *See—*
Amburn, Raymond D., 4,239,010, Cl. 111-1.000.

Didier Engineering GmbH: *See—*
Fach, Horst; and Meckel, Joachim F., 4,238,891, Cl. 34-57.00R.

Dieck, Ronald L., to General Electric Company. Modified polyester compositions. 4,239,677, Cl. 260-40.00R.

Diedrich, Bernd: *See—*
Franke, Rainer; and Diedrich, Bernd, 4,239,650, Cl. 252-429.00B.

Diessel, Paul: *See—*
Perner, Johannes; Stoeckigt, Dieter; Diessel, Paul; Merger, Franz; and Paetsch, Juergen, 4,239,552, Cl. 134-28.000.
Perner, Johannes; Diessel, Paul; Stoeckigt, Dieter; Merger, Franz; and Paetsch, Juergen, 4,239,641, Cl. 252-142.000.

Dinges, Frank; and Tartaglio, Robert L. Keyboard operated controller. 4,240,011, Cl. 315-292.000.

Dingwall, Andrew G. F., to RCA Corporation. Integrated circuit device including both N-channel and P-channel insulated gate field effect transistors. 4,240,093, Cl. 357-42.000.

Dinklage, Horst: *See—*
Fink, Herbert; Huebner, Klaus; Dinklage, Horst; and Ottofrickenstein, Hans, 4,239,671, Cl. 260-29.6TA.

Dinter, Peter: *See—*
Kolbe, Andreas; and Dinter, Peter, 4,239,973, Cl. 250-531.000.

Dionne, Yvon O.: *See—*
Murphy, Peter; Dionne, Yvon O.; Kral, Jerry J.; and Stefaniszyn, John, 4,240,026, Cl. 324-54.000.

Dixon, George D.; and Croop, Edward J., to Westinghouse Electric Corp. Method of making heat curable adhesive coated insulation for transformers. 4,239,077, Cl. 156-272.000.

Dixon, Russel H. Water-pressure, drain-cleaning device. 4,238,860, Cl. 4-256.000.

Dobias, Frank L., to Binks Manufacturing Company. Air washer particularly for paint spray booths. 4,239,512, Cl. 55-90.000.

Dobkin, Robert C., to Hyrbrinetics, Inc. Power control arrangement and control circuit especially suitable for use therewith. 4,239,986, Cl. 307-252.00B.

Dobrinsky, Gleb K.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.

Dobrosielski, Stephen S.: *See—*
Johnston, Robert J.; Colista, Dominic; Layciak, Stephen G.; and Dobrosielski, Stephen S., 4,239,946, Cl. 200-51.130.

Dobson, Austin J.: *See—*
Dobson, George M.; Zerner, Donald T.; and Dobson, Austin J., 4,239,126, Cl. 221-211.000.

Dobson, George M.; Zerner, Donald T.; and Dobson, Austin J. Seed sower having apertured pick-up member. 4,239,126, Cl. 221-211.000.

Dockal, E. J. Head-supported optic shield. 4,239,352, Cl. 351-57.000.

Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, to BASF Aktiengesellschaft. Process for producing 1-hydroxymethylimidazoles. 4,239,895, Cl. 548-341.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Wellendorf, Klaus; and Sommer, Ruediger, 4,240,117, Cl. 358-296.000.
Wellendorf, Klaus; and Sommer, Ruediger, 4,240,118, Cl. 358-296.000.

Dodemont, Gerard P.; and Viallefont, Christian H., to Poclain. Device for the rotary assembly of a member controlled by pressurized fluid. 4,239,273, Cl. 294-88.000.

Doi, Kiyoshi. Camera body mount. 4,239,364, Cl. 354-286.000.

Doland, George D. Concatenated error correcting system. 4,240,156, Cl. 371-43.000.

Doll, Brian E.; Coty, Vernon F.; and Lifland, Philip P., to Mobil Oil Corporation. Cyanide removal from wastewaters. 4,239,620, Cl. 210-601.000.

Domtar Inc.: *See—*
Job, Allen R., 4,239,537, Cl. 75-257.000.

Dorfman, Bertrand. Carrier current communications system. 4,239,940, Cl. 179-2.510.

Dorn, Charles W., Jr.: *See—*
Cathers, William P.; and Dorn, Charles W., Jr., 4,239,016, Cl. 118-624.000.

Dorn, Russell J.: *See—*
Arribau, Jorge O.; and Dorn, Russell J., 4,239,396, Cl. 366-2.000.

Dostmann GmbH & Co. KG: *See—*
Dostmann, Heinz, 4,238,958, Cl. 73-386.000.

Dostmann, Heinz, to Dostmann GmbH & Co. KG. Barometer. 4,238,958, Cl. 73-386.000.

Douard, Pierre-Rene: *See—*
Thibonnier, Jacques; Douard, Pierre-Rene; and Thepot, Jean M. L., 4,239,420, Cl. 406-2.000.

Douglas Battery Manufacturing Co.: *See—*
Picciolo, William A., 4,239,836, Cl. 429-65.000.

Dow Chemical Company, The: *See—*
Bredeweg, Corwin J., 4,239,863, Cl. 525-263.000.
Hairston, Thomas J., 4,239,919, Cl. 568-727.000.
Hudson, Roger D., 4,239,267, Cl. 285-228.000.
Woo, Edmund P., 4,239,694, Cl. 260-465.00D.

Dow Corning Corporation: *See—*
Clark, Harold A.; and Haluska, Loren A., 4,239,668, Cl. 260-29.20M.
Homan, Gary R.; and Lee, Chi-long, 4,239,674, Cl. 260-37.0SB.
Legrow, Gary E.; and Gauthier, Laura A., 4,239,867, Cl. 525-478.000.

Dow Corning K.K.: *See—*
Asai, Kiyoshi, 4,239,042, Cl. 128-214.400.

Dowle, Michael D.: *See—*
Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, 4,239,769, Cl. 424-274.000.

Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, to Anic S.p.A. Oligomeric iminic derivatives of aluminum hydride and method for the ir preparation. 4,239,692, Cl. 260-448.00R.

Dresser Industries, Inc.: *See—*
Baron, George B., 4,239,305, Cl. 308-222.000.
Fenske, Douglas H., 4,239,736, Cl. 423-173.000.
Oliver, Donald W.; and Culver, Richard B., 4,239,965, Cl. 250-270.000.

Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, to Robert Bosch GmbH. Method and apparatus for fuel control of an internal combustion engine during cold-starting. 4,239,022, Cl. 123-491.000.

Dreyfus, Russell W.; Penebre, Nicholas A.; and McCorkle, Richard A., to International Business Machines Corporation. Microchannel ion gun. 4,240,007, Cl. 315-111.800.

Dri-Steem Humidifier Co., Inc.: *See—*
Morton, Bernard W., 4,239,956, Cl. 219-272.000.

Drnevich, Raymond F., to Union Carbide Corporation. Purge gas conditioning of high intensity ionization system for particle removal. 4,239,505, Cl. 55-12.000.

Dropczynski, Hartmut: *See*—
Schonmeier, Herbert; and Dropczynski, Hartmut, 4,239,142, Cl. 226-194.000.

Dross, Joachim: *See*—
Reinehr, Ulrich; Jungverdorben, Herman-Josef; Herbertz, Toni; Dross, Joachim; and Hirsch, Rolf-Burkhard, 4,239,722, Cl. 264-206.000.

Du Pont Canada, Inc.: *See*—
Pattenden, Thomas W. E., 4,239,831, Cl. 428-193.000.

Dudar, Walter H. Valve stem. 4,239,184, Cl. 251-149.600.

Dudt, Philip J., to Continental Oil Company. Process for agglomerating finely divided carbonaceous solids. 4,239,718, Cl. 264-117.000.

Duffy, James C. Rolling of stepped shafts. 4,238,944, Cl. 72-84.000.

Duffy, Raymond G.: *See*—
Conant, Roger P.; and Duffy, Raymond G., 4,239,111, Cl. 206-484.000.

Duncan, Robert L.; and Wiley, Paris H. Object indicator for moving vehicles. 4,240,152, Cl. 367-108.000.

Dunlop Australia Limited: *See*—
McDowall, William L.; and Maplesden, Alan K., 4,239,839, Cl. 429-154.000.

Dunlop Limited: *See*—
Cohen, Ellis, 4,240,061, Cl. 340-58.000.

Dunsmoor, Earl W., Jr., to Container Corporation of America. Multiply paperboard machine. 4,239,593, Cl. 162-303.000.

Dupommier, Jean-Marc: *See*—
Felten, Gilbert A.; and Dupommier, Jean-Marc, 4,239,579, Cl. 156-398.000.

Du Pont de Nemours, E. I., and Company: *See*—
Ahrens, James M., 4,239,387, Cl. 355-100.000.
Coursen, David L., 4,239,286, Cl. 299-4.000.
Hawkins, William E.; and Huskey, C. George, 4,239,160, Cl. 241-222.000.
Zumsteg, Fredrick C., 4,240,048, Cl. 332-7.510.

Durfee, Edward P. Fuel burner with air-deflecting object and method therefor. 4,239,482, Cl. 431-354.000.

Durham, Vernon O., Sr. Game of caddy. 4,239,232, Cl. 273-341.000.

Durst (U.K.) Ltd.: *See*—
Aston, Keith, 4,239,378, Cl. 355-35.000.
Aston, Keith; and Long, John G., 4,239,382, Cl. 355-63.000.

Dvornin, Vladimir S.: *See*—
Vasiliev, Petr E.; Dvornin, Vladimir S.; Kondratiev, Alexandr V.; and Kravchenko, Vladimir F., 4,240,141, Cl. 318-114.000.

Dworak, Gert: *See*—
Zima, Herbert; and Dworak, Gert, 4,239,672, Cl. 260-29.70H.

Dynachem Corporation: *See*—
Lipson, Melvin A.; and Zador, Eugene, 4,239,849, Cl. 430-281.000.

Dynamit Nobel AG: *See*—
Aust, Heinrich; Budich, Wolfgang; Nowak, Heinz; and Primessing, Franz, 4,239,574, Cl. 156-267.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Bernhardt, Gunther; and Daum, Gerhard, 4,239,703, Cl. 568-431.000.
Haage, Karl; and Scharff, Dieter, 4,239,795, Cl. 428-247.000.

E. R. Squibb & Sons, Inc.: *See*—
Eckhardt, Wolfram; and Hausladen, Johann, 4,239,970, Cl. 250-432.0PD.
Vogt, B. Richard; and Simpkins, Ligaya M., 4,239,896, Cl. 548-378.000.

Eastman Kodak Company: *See*—
Adin, Anthony; and Wilson, John C., 4,239,848, Cl. 430-270.000.
Archie, William C., Jr.; and Campbell, Gerald A., 4,239,847, Cl. 430-213.000.
Barnsbee, Clive D.; and Decker, Marvin G., 4,239,164, Cl. 242-55.530.
Gysling, Henry J.; and Gardner, Sylvia A., 4,239,846, Cl. 430-202.000.
Harvey, Donald M., 4,239,361, Cl. 354-145.000.
Henry, James W., 4,240,110, Cl. 358-107.000.
Nelan, Donald R.; and Foster, Charles H., 4,239,691, Cl. 260-345.500.
Sandhu, Mohammad A., 4,239,842, Cl. 430-7.000.

Eaton Allen Corp.: *See*—
Barouh, Victor; Rottmann, George; and DeSimone, Salvatore, 4,239,832, Cl. 428-539.000.

Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, to Citizen Watch Co., Ltd. Portable timepiece calculator with power savings feature. 4,240,150, Cl. 364-705.000.

Eckhardt, Wolfram; and Hausladen, Johann, to E. R. Squibb & Sons, Inc. Radionuclide generator. 4,239,970, Cl. 250-432.0PD.

Edgar, William D., to Koppers Company, Inc. Tall coke oven sole flue. 4,239,600, Cl. 202-138.000.

Edinen Centar Po Chimia: *See*—
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Hinova, Maya H.; and Parushev, Stoyan P., 4,239,605, Cl. 204-59.00R.

Edmundson, Thomas G.: *See*—
Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased, 4,239,823, Cl. 427-420.000.

Edwards, Alan J.: *See*—
Atkinson, Geoffrey R.; and Edwards, Alan J., 4,239,472, Cl. 425-388.000.

Edwards, Nathan P.; and White, James M., to International Business Machines Corporation. Non-destructive charge transfer device differencing circuit. 4,239,983, Cl. 307-221.00D.

Edwards, Roy. Method for treating skin ailments. 4,239,781, Cl. 424-342.000.

Ege, Werner: *See*—
Gross, Albert; and Ege, Werner, 4,239,113, Cl. 206-568.000.

Egosi, Dan. Fuel-efficient generation of ejecting steam. 4,239,603, Cl. 203-11.000.

Eguchi, Syusaku: *See*—
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, 4,239,968, Cl. 250-327.100.

Eilingsfeld, Heinz: *See*—
Seybold, Guenther; and Eilingsfeld, Heinz, 4,239,894, Cl. 548-194.000.

Eisbein, Jurgen; and Wegmann, Helmut, to Develop Dr. Eisbein GmbH & Co. Image carrier drum for an electrophotographic copier. 4,239,375, Cl. 355-16.000.

Eisele, Judith A.; Bauer, Donald J.; and Bremner, Paul R., to United States of America, Interior. Removal of impurites from clay. 4,239,735, Cl. 423-126.000.

Eisenberg, Bernard C.; and Walz, John C., to Solbern Corp. Apparatus for diverting articles. 4,239,116, Cl. 209-523.000.

Electric Power Development Co. Ltd.: *See*—
Nakabayashi, Yasuyuki; Nagata, Kenichi; and Fukuda, Shozo, 4,239,426, Cl. 406-197.000.

Elite Engineering Limited: *See*—
Rose, Edwin J., 4,238,948, Cl. 72-332.000.

Elkay Manufacturing Company: *See*—
Arnold, Don C.; Silletti, Julio D.; Ritzenthaler, Richard L.; and Wilcox, Thomas J., 4,239,182, Cl. 251-61.200.

Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, to Kulicke & Soffa Industries, Inc. Apparatus for wire bonding. 4,239,144, Cl. 228-1.00R.

Ellman, Alan G.; and Garito, Jon C. Dental threaded tapered post with vent. 4,239,489, Cl. 433-220.000.

Elson, John P., to Copeland Corporation. Compressor induction system. 4,239,461, Cl. 417-312.000.

Elton, Edward F.; Patrylak, Andrew J.; and Santangelo, Joseph G., to Air Products and Chemicals, Inc. Process for oxidation of black liquor. 4,239,589, Cl. 162-31.000.

Emerson Electric Co.: *See*—
Hildebrandt, Eugene F.; Ottersbach, Thomas V.; and DeVries, Wayne J., 4,240,001, Cl. 310-68.00E.
Williams, Steven E.; and Kunz, Bernard L., 4,239,177, Cl. 251-11.000.

Emert, Ken; and Rogers, Dan. Self-priming liquid dispenser. 4,239,131, Cl. 222-135.000.

Energy Conservation Unlimited, Inc.: *See*—
Campbell, Scott, 4,238,931, Cl. 62-183.000.

Engel, Hans O.; and Luenеburg, Wolfgang, to Honeywell Inc. Manual actuator for motor driven control valve. 4,239,178, Cl. 251-14.000.

Engeler, William E., to General Electric Company. Linearized charge transfer devices. 4,240,089, Cl. 357-24.000.

Engelhard Minerals and Chemicals Corporation: *See*—
Pfefferle, William C., 4,239,499, Cl. 48-197.00R.

Engelhardt, Joachim, to Wiegand Karlsruhe GmbH. Method of effectively utilizing thermal energy in spray drying. 4,239,588, Cl. 159-48.00R.

English, George J.; and Levin, Robert E., to GTE Products Corporation. Camera and reflector having offset optical and mechanical axes. 4,239,369, Cl. 362-348.000.

Enke, Peter; Schlickmann, Helmut; Kneuper, Wolfgang; Frohberg, Ekkehard; Mink, Arno; and Weidenmuller, Jurgen, to Bayer Aktiengesellschaft. Container for packaging wire roll. 4,239,110, Cl. 206-396.000.

Enke, Steven E.: *See*—
Venton, Duane L.; Le Breton, Guy C.; and Enke, Steven E., 4,239,778, Cl. 424-305.000.

Enser, Mats A.; and Stalberg, Nils G., to International Business Machines Corporation. Method and apparatus for reducing the number of rejected documents when reading bar codes. 4,239,151, Cl. 235-437.000.

Ensley, Rufus N.: *See*—
McLean, Michael E.; Ensley, Rufus N.; Haren, Doyle V.; and Alcaraz, Anthony J., 4,239,821, Cl. 427-358.000.

Entropy Limited: *See*—
Frank, Matthew W.; and Oberbeck, Donald E., 4,238,873, Cl. 126-443.000.

EOCOM Corporation: *See*—
Norton, Lyle K.; Prichard, Robert J.; and Ochi, Margit K., 4,240,119, Cl. 358-297.000.

Era, Vaino; and Lindberg, J. Johan, to Oy Kaukas AB. Method for preparing polyurethane coatings from a neutral substance of mixed soap. 4,239,667, Cl. 260-18.0TN.

Ermini, Erminio, to Italsider S.p.A. Method for removing sulfur dioxide. 4,239,737, Cl. 423-242.000.

Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Rolling bearing for linear movement having cage extending beyond outer sleeve. 4,239,298, Cl. 308-6.00C.

Ernst, Horst M.: *See*—
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.

Ersek, Robert A.: *See—*
Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A., 4,239,492, Cl. 8-94.110.
Esaki, Leo: *See—*
Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, 4,239,584, Cl. 156-612.000.
Esposito, Gary F. Water pistol and/or flashlight structure. 4,239,129, Cl. 222-79.000.
Etablissements Francois Salomon & Fils: *See—*
Riedel, Tilo, 4,239,254, Cl. 280-605.000.
Etlis, Volf S.: *See—*
Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S., 4,239,875, Cl. 526-214.000.
Eubanks, Jerry D.; and Rose, Charles F., to Samsonite Corporation. Luggage case with brace. 4,239,093, Cl. 190-41.00R.
Evans, David P. Article of footwear with a backward extension to the sole. 4,238,894, Cl. 36-25.00R.
Evans, Karl K. Thermal expansion joint for pipes. 4,239,264, Cl. 285-173.000.
Everson, Clifford R. Device for lifting and carrying loads on top of pickup trucks. 4,239,438, Cl. 414-462.000.
EVG Entwickoungs-Gesellschaft mbH: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,239,951, Cl. 219-56.000.
Ewers, Marion H. Collapsible walker. 4,239,248, Cl. 280-42.000.
Excell Corporation: *See—*
Nakagawa, Tatsuya, 4,239,474, Cl. 425-525.000.
Exxon Research & Engineering Co.: *See—*
Brois, Stanley J.; and Gutierrez, Antonio, 4,239,636, Cl. 252-48.600.
Gladrow, Elroy M.; and Winter, William E., 4,239,654, Cl. 252-455.00Z.
Gutierrez, Antonio; and Brois, Stanley J., 4,239,633, Cl. 252-32.70E.
Marin, Pierre D.; Prillieux, Marcel; and Tirtiaux, Robert, 4,239,634, Cl. 252-33.000.
Mitchell, Howard L., III; and Waghorne, Robert H., 4,239,658, Cl. 252-465.000.
White, Kevin E., 4,240,015, Cl. 318-338.000.
Zory, Peter S.; Scholl, Frederick W.; and Lockwood, Harry F., 4,240,098, Cl. 357-74.000.
Eysn, Manfred; and Meyer, Daniel, to Voest-Alpine Aktiengesellschaft; and Societe Siderurgique Chatillon Neuves Maisons. Converter bottom fastening arrangement. 4,239,193, Cl. 266-243.000.
Fabian, Wolfgang; Kranz, Joachim; and Stoeckelmann, Guenter, to BASF Aktiengesellschaft. Easily water-dispersed formulations of finely divided phthalocyanines. 4,239,549, Cl. 106-308.00Q.
Fabris, Hubert J.; Herold, Robert J.; and Schmucker, Arden E., to General Tire & Rubber Company, The. Thermoplastic polyurethane prepared from a poly-1,2-propylene ether glycol, a low molecular weight glycol and 2,4-tolylene diisocyanate. 4,239,879, Cl. 528-76.000.
Fach, Horst; and Meckel, Joachim F., to Bergwerksverband GmbH; and Didier Engineering GmbH. Arrangement for drying and preheating of coking coal. 4,238,891, Cl. 34-57.00R.
Fahlen, Karl L., to Aktiebolaget Electrolux. Brush-beater roller for a vacuum cleaner. 4,238,870, Cl. 15-389.000.
Fahlen, Theodore S.; and Clark, David J., to GTE Products Corporation. Pulsed laser electrode assembly. 4,240,044, Cl. 331-94.5PE.
Fahlvik, Hans A.; and Sandquist, Kurt E., to Aktiebolaget Electrolux. Autoclave apparatus for sterilizing objects. 4,239,730, Cl. 422-109.000.
Falk, Robert A., to Ciba-Geigy Corporation. Perfluoroalkyl carboxylic acids. 4,239,915, Cl. 562-481.000.
Fanning, William J.; and Masopust, Otto T., Jr., to Western Electric Company, Inc. Metallized film capacitor and method of manufacture. 4,240,127, Cl. 361-304.000.
Faria, Sixdeniel; and Chiola, Vincent, to GTE Products Corporation. Electrophotoconductive Cd S Se materials with Cu and Cl. 4,239,844, Cl. 430-67.000.
Farmatis, S.p.A.: *See—*
Del Conte, Maria L., 4,239,920, Cl. 568-734.000.
Faroudja, Yves C., to Faroudja, Yves C. Method and apparatus for separation of chrominance and luminance with adaptive comb filtering in a quadrature modulated color television system. 4,240,105, Cl. 358-31.000.
Farr, Eric, to Tecsports of Oxford Limited. Devices for practising ball-game stroke play. 4,239,215, Cl. 273-29.00A.
Fasth, Anders G., to Atlas Copco Aktiebolag. High pressure spray gun. 4,239,157, Cl. 239-288.500.
Fausone, David C. Face lifting equipment. 4,239,037, Cl. 128-76.00B.
Fawcett, Harry E., to Cablecraft, Inc. Universal seal and support guide for push-pull cable terminals. 4,238,974, Cl. 74-501.00R.
Feast, Alan A. J.: *See—*
Scott, Charles M.; and Feast, Alan A. J., 4,239,669, Cl. 260-29.60R.
Federal Signal Corporation: *See—*
Gosswiller, Earl W., 4,240,062, Cl. 340-81.00R.
Feldman, Donald W.; Weaver, Lelland A.; and Liu, Chi-Sheng, to Westinghouse Electric Corp. Metal vapor Raman frequency shifter. 4,239,995, Cl. 307-426.000.
Feldmann, Rainer; and Gorke, Klaus, to Chemische Werke Huls AG. Polyamide coated base material having an intermediate layer of polybutadiene. 4,239,807, Cl. 428-462.000.
Feldpausch, Hugo. Oscillating feeding apparatus. 4,239,103, Cl. 198-443.000.
Feldstein, Nathan, to Surface Technology, Inc. Catalytic primer. 4,239,538, Cl. 106-1.110.
Felicioli, Maria G.: *See—*
Campolmi, Stefano; Felicioli, Maria G.; Carletti, Vittorio; and Santi, Roberto, 4,239,914, Cl. 562-466.000.
Fellowes Manufacturing Company: *See—*
Klaus, Gerald R., 4,239,306, Cl. 312-111.000.
Felten, Gilbert A.; and Dupommier, Jean-Marc, to Goodyear Tire & Rubber Company, The. Tire building drum. 4,239,579, Cl. 156-398.000.
Felter, John V. Fan with adjustable legs for improving building heating and cooling. 4,239,459, Cl. 417-234.000.
Fennell Corporation: *See—*
Hyre, Charles E., 4,239,480, Cl. 431-264.000.
Fenske, Douglas H., to Dresser Industries, Inc. Method for increasing the brightness of limestone. 4,239,736, Cl. 423-173.000.
Fernandes, Robert J.: *See—*
Ridley, Richard D.; and Fernandes, Robert J., 4,239,284, Cl. 299-2.000.
Ferrigno, Thomas H. Low density fillers and pigments. 4,239,675, Cl. 260-39.0SB.
Ferro Manufacturing Corporation: *See—*
Pickles, Joseph, 4,238,991, Cl. 92-85.00A.
Feucht, Rudi: *See—*
Biermann, Peter; Feucht, Rudi; Schmidt, Manfred; and Storandt, Ralf, 4,239,257, Cl. 280-615.000.
Fey, Maurice G.: *See—*
Harvey, Francis J., II; Ciliberti, David F.; Meyer, Thomas N.; and Fey, Maurice G., 4,239,740, Cl. 423-350.000.
Fiat Auto S.p.A.: *See—*
Jacoponi, Stefano, 4,239,098, Cl. 192-111.00A.
Filippov, Iosif F.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,239,999, Cl. 310-52.000.
Filtrol Corporation: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,239,651, Cl. 252-438.000.
Finetex Incorporated: *See—*
Brown, Herman, 4,239,631, Cl. 252-8.750.
Fink, Herbert; Huebner, Klaus; Dinklage, Horst; and Ottofrickenstein, Hans, to Rohm GmbH. Dispersions of hydrophilic acrylic resins. 4,239,671, Cl. 260-29.6TA.
Finncombi Sakari Mononen Ky: *See—*
Mononen, Sakari, 4,239,067, Cl. 144-2.00Z.
Firestone Tire & Rubber Company, The: *See—*
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., 4,239,860, Cl. 525-131.000.
Ravagnani, Frederick J.; and Schonfeld, Steven E., 4,239,663, Cl. 260-5.000.
Fischer, Rolf; and Weitz, Hans-Martin, to BASF Aktiengesellschaft. Preparation of crotonaldehydes. 4,239,706, Cl. 568-484.000.
Fischer, Winfried: *See—*
Braese, Hans-Eberhard; Fischer, Winfried; Hardt, Dietrich; Prinz, Richard; and Serini, Volker, 4,239,861, Cl. 525-151.000.
Fisons Limited: *See—*
Cairns, Hugh; Brown, Kenneth; and Altouyan, Roger E. C., 4,239,748, Cl. 424-45.000.
Fletcher, David L.; and Stadlin, Walter O., to Leeds & Northrup Company. Measuring system. 4,240,149, Cl. 364-483.000.
Fliege, Werner: *See—*
Nissen, Axel; Heiien, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,239,657, Cl. 252-464.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. Various 15-deoxy-16-hydroxy-16-ethynyl and 16-ethynylsubstituted prostaglandins. 4,239,899, Cl. 556-438.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. Various 15-deoxy-16-hydroxy-16-ethynyl and 16-ethynylsubstituted prostaglandins. 4,239,900, Cl. 556-438.000.
Fluid Power Research, Inc.: *See—*
Heskett, Don E., 4,239,621, Cl. 210-687.000.
Flynn, Richard T.: *See—*
Kindell, Jerry L.; and Flynn, Richard T., 4,240,144, Cl. 364-200.000.
FMC Corporation: *See—*
Van Saun, William A., Jr., 4,239,773, Cl. 424-285.000.
Foa, Joseph V., to United States of America, Navy. Core-flow rotary jet. 4,239,155, Cl. 239-265.170.
Fodor, Lawrence M.: *See—*
Wilson, Joseph F.; Fodor, Lawrence M.; and Kenton, Joseph R., 4,239,522, Cl. 71-29.000.
Fomin, Valery A.: *See—*
Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S., 4,239,875, Cl. 526-214.000.
Fontaine, Pierre, to Societe Nationale des Poudres et Explosifs. Device for receiving and handling propellant powders. 4,238,988, Cl. 86-1.00R.
Ford Motor Company: *See—*
Miller, Gerald R.; and Virkar, Anil V., 4,239,838, Cl. 429-104.000.
Simko, Aladar O., 4,239,023, Cl. 123-275.000.
Forme, Jacques, to Societe Chauvin Arnoux. Device for the transmission by load variation of an alternating analog signal from a sensor. 4,240,067, Cl. 340-870.370.

Foster, Charles H.: *See*—
Nelan, Donald R.; and Foster, Charles H., 4,239,691, Cl. 260-345.500.

Foster, Michael R.; and Smith, Jack E., to General Motors Corporation. Catalytic converter having a monolith with support and seal means therefor. 4,239,733, Cl. 422-179.000.

Foster Wheeler Energy Corporation: *See*—
McCallister, Robert A., 4,239,693, Cl. 260-449.500.

Four Star Corporation: *See*—
Kowalski, Daniel J., 4,239,138, Cl. 224-321.000.

Fowler, Thomas P., to Research Products Corporation. Load indicator for an air cleaner. 4,240,072, Cl. 340-664.000.

Frame, Floyd L. Tire stripping apparatus. 4,238,980, Cl. 82-54.000.

Frank, Anton: *See*—
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,239,895, Cl. 548-341.000.

Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., to United States of America, Agriculture. Ternary salts of tris(aminomethyl)phosphines and their oxides. 4,239,701, Cl. 564-15.000.

Frank, Matthew W.; and Oberbeck, Donald E., to Entropy Limited. Apparatus for collecting and transporting heat energy. 4,238,873, Cl. 126-443.000.

Franke, Rainer; and Diedrich, Bernd, to Hoechst Aktiengesellschaft. Process for the manufacture of a mixed catalyst. 4,239,650, Cl. 252-429.00B.

French, Gordon B., to Occidental Oil Shale, Inc. Method of attenuating airblast from detonating explosive in an in situ oil shale retort. 4,239,285, Cl. 299-2.000.

Freudenschuss, Otto; Kantner, Otto; and Kittag, Gerd, to Vockenhuber, Karl; and Hauser, Raimund. System for the performance of photographing with a motion picture camera, still picture camera or television camera. 4,239,356, Cl. 354-23.00R.

Frohberg, Ekkehard: *See*—
Enke, Peter; Schlickmann, Helmut; Kneuper, Wolfgang; Frohberg, Ekkehard; Mink, Arno; and Weidenmuller, Jurgen, 4,239,110, Cl. 206-396.000.

Frohberger, Paul-Ernst: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Kuhle, Engelbert; Frohberger, Paul-Ernst; and Beandes, Wilhelm, 4,239,766, Cl. 424-269.000.
Sasse, Klaus; Gauss, Walter; Frohberger, Paul-Ernst; Kraus, Peter; and Paul, Volker, 4,239,760, Cl. 424-249.000.

Fromageries Bel, societe anonyme: *See*—
Guiraud, Richard J.; and Arnaud, Michel R., 4,239,784, Cl. 426-104.000.

Froom, Thomas W., to Rendoll Paper Corporation. Folding ice-cream carton and carton blank therefor. 4,239,115, Cl. 206-611.000.

Frye, Kenneth G., to Lenox Machine Company, Inc. Web spreader. 4,239,141, Cl. 226-7.000.

Fuji Photo Film Co., Ltd.: *See*—
Aoki, Kozo; and Yokota, Yukio, 4,239,851, Cl. 430-377.000.
Hara, Hiroshi; and Suzuki, Yoshiaki, 4,239,843, Cl. 430-17.000.
Kato, Hajime; and Ogata, Yasuhiro, 4,239,815, Cl. 427-150.000.
Kita, Nobuyuki; Uchida, Toshio; Ikeda, Sadaharu; and Sato, Shigeru, 4,239,850, Cl. 430-281.000.
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, 4,239,968, Cl. 250-327.100.

Fuji Photo Optical Co., Ltd.: *See*—
Numata, Saburo, 4,240,008, Cl. 315-151.000.

Fujimori, Naoji: *See*—
Yamamoto, Takaharu; Asai, Tsuyoshi; Fujimori, Naoji; and Tobioka, Masa-aki, 4,239,536, Cl. 75-238.000.

Fujioka, Kazuyoshi, to Nissan Motor Company, Limited. Arrangement to cool oil in hydraulic control system of automatic transmission for industrial vehicle. 4,238,929, Cl. 60-336.000.

Fujita, Takashi: *See*—
Iijima, Yasuo; Shinohara, Koichi; Fujita, Takashi; Odagiri, Masaru; and Kunieda, Toshiaki, 4,239,835, Cl. 428-611.000.
Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Catalyst for purifying exhaust gases and carrier for the catalyst. 4,239,656, Cl. 252-462.000.

Fujitsu Fanuc Limited: *See*—
Harano, Keiichi; and Oyama, Shigeaki, 4,240,000, Cl. 310-54.000.
Inaba, Hajimu; and Miyashita, Hideo, 4,240,016, Cl. 318-562.000.

Fukasawa, Hiromichi: *See*—
Hasegawa, Hiroshi; and Fukasawa, Hiromichi, 4,239,729, Cl. 422-48.000.

Fukuda, Shozo: *See*—
Nakabayashi, Yasuyuki; Nagata, Kenichi; and Fukuda, Shozo, 4,239,426, Cl. 406-197.000.

Fukuda, Yasuo; Arai, Michio; and Yamamoto, Hidemi, to Tokyo Shibaura Denki Kabushiki Kaisha. Address generating system. 4,240,139, Cl. 364-200.000.

Fukui, Kunisuke, to Mitsui Petrochemical Industries Ltd. Process for polymerization of butene. 4,239,871, Cl. 526-73.000.

Fulhaber, H. Lucien, to Papenmeier France Sarl. Mandrel with retractable segments. 4,239,473, Cl. 425-392.000.

Fuller, Timothy J.: *See*—
Allcock, Harry R.; Fuller, Timothy J.; and Matsumura, Kiyotoshi, 4,239,755, Cl. 424-209.000.

Furuta, Kenzi: *See*—
Satoh, Ken; and Furuta, Kenzi, 4,239,957, Cl. 235-92.0DN.

Fushimi, Kiyoshi; and Shimizu, Keizo, to Hitachi, Ltd. Channel selection system for television receiver. 4,240,114, Cl. 358-193.100.

Futami, Atsushi: *See*—
Yanagioka, Hiroshi; Futami, Atsushi; Shinsenji, Masatake; and Tanaka, Minoru, 4,239,515, Cl. 55-223.000.

G.D. Searle & Co.: *See*—
Adelstein, Gilbert W., 4,239,908, Cl. 542-416.000.

GAF Corporation: *See*—
Sachs, Peter R., 4,239,797, Cl. 428-327.000.
Schneider, Louis; and Graham, David E., 4,239,688, Cl. 260-326.430.

Gaffey, Troy M.: *See*—
Broekhuizen, Willem; Gaffey, Troy M.; Joglekar, Mukund M.; and Neathery, William D., 4,239,455, Cl. 416-145.000.
Joglekar, Mukund M.; Gaffey, Troy M.; Broekhuizen, Willem; and Neathery, William D., 4,239,456, Cl. 416-145.000.

Gager, Robert F.: *See*—
Jacko, Michael G.; and Gager, Robert F., 4,239,666, Cl. 260-17.500.

Galetta, Nick: *See*—
Haas, David J.; Galetta, Nick; and Juner, Adolf, 4,239,969, Cl. 250-359.000.

Galexie Manufacturing Pty. Ltd.: *See*—
Stanley, Louis, 4,239,224, Cl. 273-143.00R.

Galluppi, Filippo B., to Venus Scientific Inc. Recirculating light amplifier with optical feedback. 4,239,960, Cl. 250-213.0VT.

Gambro AB: *See*—
Stenberg, Kaj O.; and Traven, Lars J. C., 4,239,728, Cl. 422-46.000.

Gando, Masayoshi: *See*—
Kurokawa, Hiromichi; Nakamura, Yasuo; Gando, Masayoshi; Okada, Haruhiko; Yamazaki, Masaru; and Yamanaka, Hideo, 4,240,006, Cl. 313-386.000.

Gangneux, Philippe Y. E.: *See*—
Bonnet, Evelyne J. M.; and Gangneux, Philippe Y. E., 4,239,868, Cl. 525-279.000.

Gannon, Donald N., to Boeing Company, The. Weight coded delivery conveyor system. 4,239,434, Cl. 414-136.000.

Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; Orth, Dieter; Wild, Albrecht; and Simane, Zdenek, to Merck Patent Gesellschaft mit beschrankter Haftung. Morpholino containing compounds, compositions and use thereof. 4,239,759, Cl. 424-248.400.

Gardner, Jeffrey M., to Container Corporation of America. Heavy duty partition. 4,239,147, Cl. 229-15.000.

Gardner, Sylvia A.: *See*—
Gysling, Henry J.; and Gardner, Sylvia A., 4,239,846, Cl. 430-202.000.

Garito, Jon C.: *See*—
Ellman, Alan G.; and Garito, Jon C., 4,239,489, Cl. 433-220.000.

Garlock Inc.: *See*—
Bainard, Dean R.; and Denton, Dennis N., 4,239,243, Cl. 277-153.000.

Garner, Gerald D.: *See*—
Stoller, Patricia S.; Garner, Gerald D.; and Krug, John A., Jr., 4,239,059, Cl. 137-587.000.
Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., 4,239,060, Cl. 137-587.000.

Gaspar, Lawrence A.; Tessler, Martin; and Malcolm, Alexander R., to National Starch and Chemical Corp. Starch blend, process of sizing paper therewith, and product thereof. 4,239,592, Cl. 162-175.000.

Gates, William H., to Moyles, George L.; and Shook, Roy, part interest to each. Spray head extension for pressure dispensers. 4,239,158, Cl. 239-567.000.

Gauss, Walter: *See*—
Sasse, Klaus; Gauss, Walter; Frohberger, Paul-Ernst; Kraus, Peter; and Paul, Volker, 4,239,760, Cl. 424-249.000.

Gauthier, John A.; Shaver, David M.; and Ramsay, John R., to GTE Automatic Electric Laboratories Incorporated. Ringing signal generator. 4,239,941, Cl. 179-84.00R.

Gauthier, Laura A.: *See*—
Legrow, Gary E.; and Gauthier, Laura A., 4,239,867, Cl. 525-478.000.

Gearhart, Junior A., to Kerr-McGee Refining Corporation. Solvent deasphalting. 4,239,616, Cl. 208-309.000.

Geier, Roland. Quantity control valve for controlling the quantity of a pressure medium. 4,239,179, Cl. 251-38.000.

Geiger, Friedhelm: *See*—
Schreyer, Gerd; Geiger, Friedhelm; and Hensel, Jorg, 4,239,696, Cl. 260-513.00R.

Geiss, Horst. Apparatus for cleaning containers. 4,238,892, Cl. 34-85.000.

Geitner, Lawrence J.; and Herbeck, Christian C., to Buffalo Forge Company. Adjusting mechanism for variable inlet vane. 4,239,450, Cl. 415-160.000.

Gellert, Dale A., to Procter & Gamble Company, The. Absorbent means for catamenial devices. 4,239,043, Cl. 128-285.000.

General Dynamics Corporation: *See*—
Krumweide, Gary C., 4,239,564, Cl. 156-79.000.
Wrench, Edwin H., 4,239,343, Cl. 350-295.000.

General Electric Company: *See*—
Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., 4,239,560, Cl. 148-189.000.
Cline, Harvey E.; Anthony, Thomas R.; and Solomon, Harvey D., 4,239,556, Cl. 148-38.000.
Crivello, James V., 4,239,725, Cl. 264-328.600.
Dieck, Ronald L., 4,239,677, Cl. 260-40.00R.
Engeler, William E., 4,240,089, Cl. 357-24.000.
Gilbert, Peter T., 4,239,105, Cl. 206-219.000.
Gordon, Walter H., Jr., 4,239,322, Cl. 339-184.00M.

Keeley, Donald E., 4,239,918, Cl. 568-640.000.
Kohler, Thomas P., 4,240,036, Cl. 330-10.000.
Lee, Gim F., Jr., 4,239,673, Cl. 260-30.60R.
Roedel, George F., 4,239,877, Cl. 528-14.000.
Schrader, Paul D., 4,238,932, Cl. 62-197.000.
Schroeter, Siegfried H.; and Olson, Daniel R., 4,239,798, Cl. 428-331.000.
Slack, Glen A.; and Knapp, Warren S., 4,239,502, Cl. 51-295.000.
Tomlinson, Harold W., Jr., 4,240,116, Cl. 358-213.000.
Williams, Joseph B., 4,239,678, Cl. 260-42.180.

General Kinetics Incorporated: *See*—
Gutterman, Robert P., 4,239,959, Cl. 235-493.000.

General Motors Corporation: *See*—
Foster, Michael R.; and Smith, Jack E., 4,239,733, Cl. 422-179.000.
Gladd, Joseph H.; Horrell, Theodore H., Jr.; and Plyler, Robert G., 4,239,319, Cl. 339-147.00R.
Gonas, Albert J.; Packett, Marvin A.; and Street, Donald A., 4,239,279, Cl. 296-210.000.

General Tire & Rubber Company, The: *See*—
Arnason, Sigurdur I., 4,239,808, Cl. 428-482.000.
Fabris, Hubert J.; Herold, Robert J.; and Schmucker, Arden E., 4,239,879, Cl. 528-76.000.
Henley, Virgil E.; Hineborg, James R.; and Nixdorf, Donald H., 4,239,565, Cl. 156-126.000.
Roper, Ralph E., 4,238,949, Cl. 72-358.000.
Shanoski, Henry; and Griffith, Richard M., 4,239,796, Cl. 428-315.000.

Gentex Corporation: *See*—
Aileo, Jackson A., 4,239,106, Cl. 206-223.000.

George, Henry H., to Allegheny Ludlum Industries, Inc. Spherical connector having integrally formed outlets. 4,239,263, Cl. 285-150.000.

Geosource Inc.: *See*—
Lockett, James F., 4,239,118, Cl. 209-581.000.

Gerlach, Klaus; Mathes, Nikolaus; and Wechs, Friedbert, to Akzona Incorporated. Fiber structures of split multicomponent fibers and process therefor. 4,239,720, Cl. 264-147.000.

Gesellschaft fur Strahlen-und Umweltforschung mbH, Munchen: *See*—
Haina, Diether; Poth, Willi; and Waidelich, Wilhelm, 4,240,133, Cl. 362-293.000.

GF Business Equipment, Inc.: *See*—
Textoris, Melvin A.; and Rauschenberg, Richard, 4,239,932, Cl. 174-48.000.

Ghez, Richard A.; Gunn, John B.; Hammer, Robert; and Van Vechten, James A., to International Business Machines Corporation. Etching of multiple holes of uniform size. 4,239,586, Cl. 156-644.000.

Giani, Adolfo; Panseri, Mario; and Mascioni, Umberto, to Reggiani Macchine S.p.A. Rotary cylindrical screen printing apparatus for specularly printing equal patterns and/or colors onto the opposite faces of fabrics or the like. 4,238,999, Cl. 101-116.000.

Gibson, Harry; and Maycock, Peter F., to Smiths Industries Limited. Electrical digital display indicators. 4,240,074, Cl. 340-753.000.

Giglio, Richard J.; Bogosh, Robert B.; and Lasnier, David A., to A. W. Chesterton Company. Packing seals and method of making. 4,239,245, Cl. 277-203.000.

Gilbert, Lawrence A.; and Leist, Jeffrey R., to Procter & Gamble Company, The. Granular detergent composition comprising air-sensitive material in protective bag. 4,239,639, Cl. 252-90.000.

Gilbert, Peter T., to General Electric Company. Resin capsule for mining roof bolting systems. 4,239,105, Cl. 206-219.000.

Gillen, William F., Jr. Precast concrete threaded pilings. 4,239,419, Cl. 405-232.000.

Gilles, Ewald: *See*—
Krohmann, Walter; and Gilles, Ewald, 4,239,101, Cl. 193-37.000.

Gillette Company, The: *See*—
Jacobson, Chester F.; and Poisson, Norman D., 4,238,883, Cl. 30-162.000.

Gillio-Tos, Mario: *See*—
Weinberg, Alan S.; and Gillio-Tos, Mario, 4,239,799, Cl. 428-335.000.

Gillis, John R.; and Halleck, Frank E., to American Sterilizer Company. Apparatus for biocidal sterilization using cyclic subatmospheric pressure conditioning. 4,239,731, Cl. 422-112.000.

Gilman, Richard. Insulation tubes and process of making same. 4,239,064, Cl. 138-154.000.

Gilmore, Cecilia; and Miller, Donald E., to SCM Corporation. Coffee whitener and use of fluid shortening therein. 4,239,786, Cl. 426-601.000.

Gindler, E. Melvin; and Miller, Nadine, to Sherwood Medical Industries Inc. Determination of protein. 4,239,495, Cl. 23-230.00B.

Gindler, E. Melvin; and Mezei, Louis M., to Sherwood Medical Industries Inc. Cholesterol standard. 4,239,649, Cl. 252-408.000.

Ginsberg, Thomas; and Kaufman, Lawrence G., to Union Carbide Corporation. Aminosilane modified zinc-rich coating compositions. 4,239,539, Cl. 106-1.170.

Giolitti, Alberto, to Ing. C. Olivetti & C., S.p.A. Electronically controlled printing unit. 4,239,400, Cl. 400-144.200.

Girgis, Mikhail M., to PPG Industries, Inc. Glass fiber coating composition. 4,239,800, Cl. 428-374.000.

Girling Limited: *See*—
Kaub, Manfred, 4,239,296, Cl. 303-24.00A.

Gitchel, Wayne B., to Sterling Drug Inc. Process for the production of power from crude fuels containing high concentrations of sulfur. 4,238,922, Cl. 60-39.050.

Glacier Metal Company Limited, The: *See*—
Pratt, George C., 4,239,715, Cl. 264-70.000.

Gladd, Joseph H.; Horrell, Theodore H., Jr.; and Plyler, Robert G., to General Motors Corporation. Electrical component package for interconnection between plug and socket connectors. 4,239,319, Cl. 339-147.00R.

Gladrow, Elroy M.; and Winter, William E., to Exxon Research & Engineering Co. Hydrocarbon cracking catalyst and process utilizing the same. 4,239,654, Cl. 252-455.00Z.

Glanvall, Rune V., to Stal Refrigeration AB. Rotary compressor with valved liquid injection through the rotor. 4,239,467, Cl. 418-76.000.

Glen, Alasdair T.; and Bayles, Richard W., to Imperial Chemical Industries Limited. Anti-androgenic amides. 4,239,776, Cl. 424-304.000.

Glockler, Otto: *See*—
Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,239,022, Cl. 123-491.000.

Gloucester Railway Carriage & Wagon Company Limited: *See*—
Morris, Robert S., 4,239,302, Cl. 308-138.000.

Gluck, Otto; and Jakovski, Norbert, to Triumph Werke Nurnberg A.G. Hinged single piece aligning scale for typewriters. 4,239,406, Cl. 400-645.000.

Godber, Stephen J.: *See*—
Bligh, Bernard R.; and Godber, Stephen J., 4,239,509, Cl. 55-66.000.

Godwin, Edward J. Key band. 4,239,136, Cl. 224-219.000.

Goethlich, Lutz: *See*—
Reitel, Christian; and Goethlich, Lutz, 4,239,866, Cl. 525-440.000.

Goetz, Philip J., to Pen Kem, Inc. Automatic electrophoresis apparatus. 4,239,612, Cl. 204-299.00R.

Goksel, Mehmet A., to Michigan Technological University, Board of Control of. Process for producing metallized iron pellets. 4,239,530, Cl. 75-34.000.

Gold Kist, Inc.: *See*—
Curtis, Joel E.; and Hall, Thornton D., 4,238,890, Cl. 34-22.000.

Golden, Ronald: *See*—
Vincent, David N.; and Golden, Ronald, 4,239,646, Cl. 252-316.000.

Goldsholl, Morton. Image processing apparatus and methods. 4,239,380, Cl. 355-52.000.

Goldsmith, Elmar L., to PPG Industries Canada, Ltd. Solution mining potassium chloride from heated subterranean cavities. 4,239,287, Cl. 299-4.000.

Goldsmith, Wesley R. Direct reading micrometer for sine-bar elevation. 4,238,888, Cl. 33-174.00S.

Golser, Hans, to Siemens Aktiengesellschaft. Gas laser having a cylindrical discharge tube. 4,240,045, Cl. 331-94.50D.

Golz, Roland, to Socsil S.A. Cryogenic pump for liquid gases. 4,239,460, Cl. 417-251.000.

Golze, Richard R. Body extender. 4,239,253, Cl. 280-460.00R.

Gombach, Anton L.: *See*—
Thellmann, Edward L.; and Gombach, Anton L., 4,239,557, Cl. 148-126.000.

Gomez, Manuel D. Thawing assembly for clogged asphalt pipes. 4,239,486, Cl. 432-225.000.

Gonas, Albert J.; Packett, Marvin A.; and Street, Donald A., to General Motors Corporation. Vehicle roof covering installation. 4,239,279, Cl. 296-210.000.

Goodyear Tire & Rubber Company, The: *See*—
Felten, Gilbert A.; and Dupommier, Jean-Marc, 4,239,579, Cl. 156-398.000.
Ofstead, Eilert A.; and Senyek, Michael L., 4,239,874, Cl. 526-143.000.
Williams, Walter G., 4,239,723, Cl. 264-315.000.

Goranson, Per S. Collapsible box with two compartments. 4,239,146, Cl. 229-15.000.

Gorbold, Jonathan M.; and Slim, David H., to Marconi Electronics, Inc. Television interval timer employing digital techniques. 4,240,100, Cl. 358-10.000.

Gorbunov, Gennady S.: *See*—
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,239,999, Cl. 310-52.000.

Gordon, Walter H., Jr., to General Electric Company. Polarity protector. 4,239,322, Cl. 339-184.00M.

Gore, Graves T., to Riegel Textile Corporation. Apparatus for inserting elastic strips during the manufacture of elastic leg disposable diapers. 4,239,578, Cl. 156-361.000.

Goris, Heinrich; Gunther, Roland; Ogorek, Kurt; and Schwarting, Karl-Heinz, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Hydromechanical planer with cutting and breaking heads. 4,239,290, Cl. 299-34.000.

Gorke, Klaus: *See*—
Feldmann, Rainer; and Gorke, Klaus, 4,239,807, Cl. 428-462.000.

Gosswiller, Earl W., to Federal Signal Corporation. Flashing light warning system for vehicles. 4,240,062, Cl. 340-81.00R.

Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, to EVG Entwickoungs-Gesellschaft mbH. Multispot grid-welding machine. 4,239,951, Cl. 219-56.000.

Gould Inc.: *See*—
Beasley, J. Donald, 4,239,543, Cl. 106-22.000.
Kozacka, Frederick J.; and Belcher, Richard A., 4,240,058, Cl. 337-231.000.
Thellmann, Edward L.; and Gombach, Anton L., 4,239,557, Cl. 148-126.000.

Gould, James S.: *See*—
Gould, Samuel; and Gould, James S., 4,240,063, Cl. 340-119.000.

Gould, Samuel; and Gould, James S., to Indicator Controls Corp. Visor assembly for pedestrian traffic signal. 4,240,063, Cl. 340-119.000.

Graf, Edwin X., to Beloit Corporation. High pressure pump for fluid jet slitter. 4,239,448, Cl. 415-89.000.

Graffin, Jean C.: *See*—
Lacombat, Michel; Graffin, Jean C.; and Antoine, Robert, 4,239,381, Cl. 355-53.000.

Graham, David E.: *See*—
Schneider, Louis; and Graham, David E., 4,239,688, Cl. 260-326.430.

Graham, Howard A.; and Palubiak, Charles, to National Steel Corporation. Work roll chock assembly for a rolling mill. 4,238,947, Cl. 72-237.000.

Graham, Ronald I.: *See*—
Peiser, Alfred M.; Graham, Ronald I.; and McClernon, Joseph R., 4,239,618, Cl. 208-355.000.

Grainger Bros., Inc.: *See*—
Grainger, James D.; and Grainger, Harold A., 4,238,951, Cl. 72-457.000.

Grainger, Harold A.: *See*—
Grainger, James D.; and Grainger, Harold A., 4,238,951, Cl. 72-457.000.

Grainger, James D.; and Grainger, Harold A., to Grainger Bros., Inc. Portable automobile straightening device. 4,238,951, Cl. 72-457.000.

Grams, Gary W.: *See*—
Allphin, N. Lee; Valentine, Fred S.; and Grams, Gary W., 4,239,930, Cl. 585-517.000.

Grane, Henry R.; Jubin, John C., Jr.; and Worrell, G. Richard, to Atlantic Richfield Company. Removing water from tertiary butyl alcohol. 4,239,926, Cl. 568-910.000.

Granger, Floyd R. Combination roof structure and solar collector. 4,239,031, Cl. 126-429.000.

Grant, Roy W. Opaque perforated filter. 4,239,327, Cl. 350-17.000.

Greacen, John F.; Knight, Kerry G.; and Lech, Thaddeus, Jr., to Borg-Warner Corporation. Multiple stage vibration damper assembly. 4,239,097, Cl. 192-106.200.

Grechin, Nikolai K.: *See*—
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.

Greco, Alberto: *See*—
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, 4,239,873, Cl. 526-114.000.

Green Cross Corporation, The: *See*—
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,239,683, Cl. 260-239.30T.

Green, Leland D., to United States of America, Air Force. Time domain laser reconnaissance technique. 4,239,388, Cl. 356-5.000.

Greenberg, Charles B.: *See*—
Breininger, J. Shannon; and Greenberg, Charles B., 4,239,816, Cl. 427-168.000.

Greif, Norbert: *See*—
Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, 4,239,491, Cl. 8-532.000.

Grief, Norbert: *See*—
Stecklum, Klaus; and Grief, Norbert, 4,239,120, Cl. 209-682.000.

Griffin, Albert N. Game device. 4,239,221, Cl. 273-127.00R.

Griffin, James E.; and Ryden, Wayne R. Heat detector for livestock. 4,239,018, Cl. 119-1.000.

Griffis, Patrick D., to RCA Corporation. Stereophonic sound synthesizer. 4,239,939, Cl. 179-1.0GP.

Griffith, Richard M.: *See*—
Shanoski, Henry; and Griffith, Richard M., 4,239,796, Cl. 428-315.000.

Griggs, William L., III; Serrano, Ernest E.; Page, Dan; and Reul, Charles G., to Griggs, William L., III. Method and apparatus for aurally determining presence or absence of pathological stenosis. 4,239,047, Cl. 128-663.000.

Grinberg, Jan; Waldner, Michael; Braatz, Paul Q.; and Jacobson, Alexander D., to Hughes Aircraft Company. High resolution AC silicon MOS light-valve substrate. 4,239,348, Cl. 350-342.000.

Grinberg, Jan: *See*—
Braatz, Paul O.; Chow, Kuen; and Grinberg, Jan, 4,239,347, Cl. 350-336.000.
Myer, Jon H.; and Grinberg, Jan, 4,239,312, Cl. 339-17.00N.

Groene, Richard L. Jack and tie-down system for a vehicle mounted cargo unit. 4,239,430, Cl. 410-68.000.

Groeneweg, William H., to RCA Corporation. Identification system for SECAM or SECAM/PAL color television receivers. 4,240,102, Cl. 358-11.000.

Gross, Albert; and Ege, Werner, to Kulzer & Co. GmbH. Composition for the preparation of bone cement. 4,239,113, Cl. 206-568.000.

Gross, Jerome A.: *See*—
Strutman, Warren A., 4,239,977, Cl. 290-44.000.

Grossman, David G., to Corning Glass Works. Spontaneously formed machinable glass-ceramics. 4,239,520, Cl. 65-33.000.

Grossman, David G.: *See*—
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,239,519, Cl. 65-2.000.

Grubb, Frederick H., Jr.: *See*—
Brownlee, Sherwood S.; Grubb, Frederick H., Jr.; and Lohr, Warren G., 4,239,311, Cl. 312-305.000.

Grubbs, Dean O.: *See*—
Hollandsworth, William J.; and Grubbs, Dean O., 4,239,389, Cl. 356-155.000.

Grudzinskas, Charles V.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,899, Cl. 556-438.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,900, Cl. 556-438.000.

Grumman Aerospace Corporation: *See*—
Levy, Paul M., 4,240,108, Cl. 358-103.000.

Grunwell, Joyce F.; and Petrow, Vladimir, to Richardson-Merrell Inc. Androst-4-en-19-ols. 4,239,681, Cl. 260-239.55R.

Gruppo Lepetit S.p.A.: *See*—
Coronelli, Carolina; Beretta, Grazia; Bardone, Maria R.; and Parenti, Francesco, 4,239,751, Cl. 424-118.000.

GSI Gesellschaft fuer Schwerionenforschung m.b.H.: *See*—
Keller, Roderich, 4,240,005, Cl. 313-231.000.

GTE Automatic Electric Laboratories Incorporated: *See*—
Blackburn, Tom L., 4,240,024, Cl. 323-4.000.
Gauthier, John A.; Shaver, David M.; and Ramsay, John R., 4,239,941, Cl. 179-84.00R.
Miknaitis, Sigitas; and Stastny, Charles J., 4,240,054, Cl. 335-152.000.

GTE Laboratories Incorporated: *See*—
Buhrer, Carl F., 4,240,010, Cl. 315-248.000.
Dakss, Mark L.; Meslener, George J.; and Stone, Samuel M., 4,239,333, Cl. 350-96.210.
Haugsjaa, Paul O.; and Lech, Joseph M., 4,240,051, Cl. 333-127.000.

GTE Products Corporation: *See*—
English, George J.; and Levin, Robert E., 4,239,369, Cl. 362-348.000.
Fahlen, Theodore S.; and Clark, David J., 4,240,044, Cl. 331-94.5PE.
Faria, Sixdeniel; and Chiola, Vincent, 4,239,844, Cl. 430-67.000.

Guenther, Gerd J., to Siemens Aktiengesellschaft. Circuit arrangement for releasing a keyboard store in teleprinters or data printers. 4,239,933, Cl. 178-17.500.

Guillaume, Claude. Rotary motor with alternating pistons. 4,239,465, Cl. 418-35.000.

Guiraud, Richard J.; and Arnaud, Michel R., to Fromageries Bel, societe anonyme. Method for preparing food products from a suspension of milk proteins with texturization. 4,239,784, Cl. 426-104.000.

Gulf Research & Development Company: *See*—
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,704, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,705, Cl. 568-487.000.
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Schulz, Johann G., 4,239,613, Cl. 208-8.0LE.

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Carrieri, Louis F.; and Spanke, Edwin A., 4,238,950, Cl. 72-446.000.

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Ghez, Richard A.; Gunn, John B.; Hammer, Robert; and Van Vechten, James A., 4,239,586, Cl. 156-644.000.

Gunther, Dieter: *See*—
Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,239,022, Cl. 123-491.000.

Gunther, Roland: *See*—
Goris, Heinrich; Gunther, Roland; Ogorek, Kurt; and Schwarting, Karl-Heinz, 4,239,290, Cl. 299-34.000.

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Schmelzer, Michael, 4,239,444, Cl. 414-685.000.

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Gutierrez, Antonio: *See*—
Brois, Stanley J.; and Gutierrez, Antonio, 4,239,636, Cl. 252-48.600.

Gutterman, Robert P., to General Kinetics Incorporated. Perpetuation of information in magnetically recorded medium. 4,239,959, Cl. 235-493.000.

Gysling, Henry J.; and Gardner, Sylvia A., to Eastman Kodak Company. Tellurium (IV) compounds and compositions. 4,239,846, Cl. 430-202.000.

Haage, Karl; and Scharff, Dieter, to Dynamit Nobel Aktiengesellschaft. Protective layer for surface seals in building construction, underground construction, and civil engineering construction. 4,239,795, Cl. 428-247.000.

Haas, David J.; Galetta, Nick; and Juner, Adolf, to North American Philips Corporation. Article inspection apparatus with protective chamber having article-loading facility. 4,239,969, Cl. 250-359.000.

Haefliger, Robert W. Pinball apparatus with replaceable modular barrier supports. 4,239,219, Cl. 273-121.00A.

Haina, Diether; Poth, Willi; and Waidelich, Wilhelm, to Gesellschaft fur Strahlen-und Umweltforschung mbH, Munchen. Quasimonochromatic light source. 4,240,133, Cl. 362-293.000.

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Debaise, Michel J., 4,239,194, Cl. 266-270.000.
Hairston, Thomas J., to Dow Chemical Company, The. Process for obtaining bisphenols. 4,239,919, Cl. 568-727.000.
Hajime Industries, Ltd.: *See*—
Yoshida, Hajime, 4,240,107, Cl. 358-93.000.
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Hall, Robert B.: *See*—
Barnett, Allen M.; Masi, James V.; and Hall, Robert B., 4,239,553, Cl. 136-256.000.
Hall, Thornton D.: *See*—
Curtis, Joel E.; and Hall, Thornton D., 4,238,890, Cl. 34-22.000.
Halleck, Frank E.: *See*—
Gillis, John R.; and Halleck, Frank E., 4,239,731, Cl. 422-112.000.
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Regel, Erik; Buchel, Karl; Haller, Ingo; and Plempel, Manfred, 4,239,765, Cl. 424-269.000.
Hallford, Ben R.; and Lutz, Bruce C., to Rockwell International Corporation. Balun filter apparatus. 4,240,052, Cl. 333-202.000.
Halm Instrument Co., Inc.: *See*—
Konars, Clement R.; Quinci, Emanuel; and Vascotto, Mario, 4,239,117, Cl. 209-553.000.
Halmos, Imre A., to American Cyanamid Company. Process for resolving DL-Mandelic acid with novel 2-benzylamino-1-butanols. 4,239,912, Cl. 562-401.000.
Halopoff, David. Security shield for padlock. 4,238,941, Cl. 70-56.000.
Haluska, Loren A.: *See*—
Clark, Harold A.; and Haluska, Loren A., 4,239,668, Cl. 260-29.20M.
Hammer, Robert: *See*—
Ghez, Richard A.; Gunn, John B.; Hammer, Robert; and Van Vechten, James A., 4,239,586, Cl. 156-644.000.
Hammonds, James C.: *See*—
Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D., 4,239,429, Cl. 410-59.000.
Hamprecht, Gerhard: *See*—
Parg, Adolf; and Hamprecht, Gerhard, 4,239,697, Cl. 260-543.00R.
Handy, Roland J., to Xerox Corporation. CCD Analog to digital converter. 4,240,068, Cl. 340-347.0AD.
Hanger, James E. Engine stand. 4,239,196, Cl. 269-17.000.
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Ries, Karl; Lather, Dieter; Kaiser, Dieter; Hannoschock, Kurt; and Simoneit, Gunter, 4,238,963, Cl. 73-644.000.
Hanson, Edward W., to Columbia Machine, Inc. Palletizer with roller-assisted off-feed device. 4,239,433, Cl. 414-84.000.
Hara, Hiroshi; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method of stabilizing organic substrates against the action of light. 4,239,843, Cl. 430-17.000.
Harano, Keiichi; and Oyama, Shigeaki, to Fujitsu Fanuc Limited. Rotary electric machine with a heat pipe for cooling. 4,240,000, Cl. 310-54.000.
Hardt, Dietrich: *See*—
Braese, Hans-Eberhard; Fischer, Winfried; Hardt, Dietrich; Prinz, Richard; and Serini, Volker, 4,239,861, Cl. 525-151.000.
Haren, Doyle V.: *See*—
McLean, Michael E.; Ensley, Rufus N.; Haren, Doyle V.; and Alcaraz, Anthony J., 4,239,821, Cl. 427-358.000.
Harper, Bill D., to Union Carbide Corporation. Process for producing solid or microcellular polyurethane elastomers having improved green strength. 4,239,857, Cl. 521-121.000.
Harris Corporation: *See*—
Mader, Jim M., 4,240,094, Cl. 357-45.000.
Harris, Denis I.; and Staples, Luke, to Norton Company. Soft acting phenol-formaldehyde resin bonded grinding wheel. 4,239,503, Cl. 51-298.000.
Harris, Donald W.: *See*—
Antrim, Richard L.; Chan, Yuk-Charn; Crary, John R., Jr.; and Harris, Donald W., 4,239,906, Cl. 536-56.000.
Harrison, Jack R., Sr. Reservoir safety razor. 4,238,882, Cl. 30-41.000.
Hartig, Juergen: *See*—
Weitz, Hans-Martin; Platz, Rolf; and Hartig, Juergen, 4,239,910, Cl. 560-244.000.
Weitz, Hans-Martin; and Hartig, Juergen, 4,239,911, Cl. 560-246.000.
Hartman, David K.: *See*—
Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., 4,239,560, Cl. 148-189.000.
Hartman, Seymour; and Brown, Timothy M., to Champion International Corporation. High moisture wood laminating process. 4,239,577, Cl. 156-312.000.
Hartmann, Bernd; and Kleinschmager, Herbert, to Brown, Boveri & Cie Aktiengesellschaft. Electrochemical storage cell. 4,239,837, Cl. 429-104.000.
Haruna, Tohru: *See*—
Ohzeki, Toshio; Akutsu, Mitsuo; Nakahara, Yutaka; Haruna, Tohru; Minagawa, Motonobu; and Nonoyama, Masahiro, 4,239,803, Cl. 428-379.000.
Harvey, Albert J., to Diamond International Corporation. Heat transfer labeling machine. 4,239,569, Cl. 156-156.000.
Harvey, Donald M., to Eastman Kodak Company. Camera having electronic strobe flash apparatus chargeable during viewfinder framing of a scene. 4,239,361, Cl. 354-145.000.
Harvey, Francis J., II; Ciliberti, David F.; Meyer, Thomas N.; and Fey, Maurice G., to Westinghouse Electric Corp. Production of high purity silicon by a heterogeneous arc heater reduction. 4,239,740, Cl. 423-350.000.
Hasegawa, Hiroshi; and Fukasawa, Hiromichi, to Terumo Corporation. Oxygenator. 4,239,729, Cl. 422-48.000.
Hasegawa, Kenichi; Taniguchi, Hiroshi; and Kitamura, Sadafumi, to Matsushita Electric Industrial Co., Ltd. Preamplifier. 4,240,038, Cl. 330-149.000.
Hasegawa, Tetuo: *See*—
Kinoshita, Tsukuru; Masuda, Shuji; and Hasegawa, Tetuo, 4,239,542, Cl. 106-18.140.
Hashimoto, Isao; Nakagawa, Hiroaki; Taguchi, Toru; and Nambu, Hirohiko, to Mitsu, Petrochemical Industries, Ltd. Process for purification of crude resorcinol. 4,239,921, Cl. 568-753.000.
Hashimoto, Masaru; and Yoshinaga, Motoaki, to Tokyo Shibaura Denki Kabushiki Kaisha. High-frequency amplifier circuit. 4,240,041, Cl. 330-288.000.
Hashimoto, Nobuyuki: *See*—
Inada, Masami; Hashimoto, Nobuyuki; and Satomoto, Atsushi, 4,239,154, Cl. 236-87.000.
Hashimoto, Teiji: *See*—
Shimizu, Masami; Hashimoto, Teiji; Miyakawa, Hideaki; Uchidoi, Masanori; Aizawa, Hiroshi; and Ito, Tadashi, 4,240,055, Cl. 335-234.000.
Hashizume, Takeshi: *See*—
Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, 4,239,903, Cl. 560-73.000.
Hasselman, Walter, Jr., to C.P. Chemical Company, Inc. Phenal-urea-formaldehyde condensation product. 4,239,881, Cl. 528-164.000.
Hatch, Arthur E.; and Yates, Douglas A., to Mobil Tyco Solar Energy Corporation. Method and apparatus for crystal growth control. 4,239,583, Cl. 156-601.000.
Haugsjaa, Paul O.; and Lech, Joseph M., to GTE Laboratories Incorporated. High frequency power combiner or power divider. 4,240,051, Cl. 333-127.000.
Hauni-Werke Korber & Co. KG: *See*—
Brand, Peter; Pinck, Peter; and Baier, Anton, 4,238,993, Cl. 131-21.00R.
Koch, Friedo, 4,238,994, Cl. 493-4.000.
Hauser, Raimund: *See*—
Freudenschuss, Otto; Kantner, Otto; and Kittag, Gerd, 4,239,356, Cl. 354-23.00R.
Hausladen, Johann: *See*—
Eckhardt, Wolfram; and Hausladen, Johann, 4,239,970, Cl. 250-432.0PD.
Hawkins, William E.; and Huskey, C. George, to Du Pont de Nemours, E. I., and Company. Film shredder. 4,239,160, Cl. 241-222.000.
Hayashi, Masaki: *See*—
Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, 4,239,865, Cl. 525-327.000.
Hayes, Robert A.: *See*—
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., 4,239,860, Cl. 525-131.000.
Hayes, Roger: *See*—
Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, 4,239,769, Cl. 424-274.000.
Hayes, Thomas E., to Johnson Controls, Inc. Furnace ignition system with draft control and loss-of-draft protection. 4,239,477, Cl. 431-20.000.
Haynes, Hendrick W. Propelling means. 4,239,013, Cl. 440-40.000.
Haynes, John L., to Becton Dickinson & Company. Apparatus for counting particles in a liquid suspension. 4,240,029, Cl. 324-71.0CP.
Hays, George E.; and Cook, Charles F., to Phillips Petroleum Company. Natural gas purification. 4,239,510, Cl. 55-68.000.
Hazen Research, Inc.: *See*—
Kindig, James K.; and Turner, Ronald L., 4,239,529, Cl. 75-1.00R.
Hedger, John H. Reciprocating engine with improved power output linkage. 4,238,990, Cl. 91-186.000.
Hedlund, John A. Profiled tire tread. 4,239,075, Cl. 152-209.00R.
Heffernan, Patrick M., to Sumari Engineering. Switching circuit for controlling various appliances. 4,239,987, Cl. 307-252.00B.
Heffner, William R.: *See*—
Berreman, Dwight W.; and Heffner, William R., 4,239,345, Cl. 350-331.00R.
Heiien, Gerd: *See*—
Nissen, Axel; Heiien, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,239,657, Cl. 252-464.000.
Heijmen, Hendricus J.: *See*—
deJong, Aaldert J.; and Heijmen, Hendricus J., 4,239,923, Cl. 568-875.000.
Hein, Lars, to Polystan A/S. Blood pump. 4,239,464, Cl. 417-474.000.
Helbig, Klaus; and Rietsch, Eike, to Deutsche Texaco Aktiengesellschaft. Variable digital to analog converter. 4,240,070, Cl. 340-347.0DA.
Heller, William C., Jr.: *See*—
Leatherman, Alfred F., 4,239,575, Cl. 156-272.000.
Hemens, James F., to Teleflex Morse Limited. Remote control mechanisms. 4,238,972, Cl. 74-473.00P.
Henderson, David G. Three-dimensional domino game. 4,239,231, Cl. 273-293.000.
Hengstenberg, Eckhart. Apparatus for blanching sauerkraut. 4,238,997, Cl. 99-483.000.
Henkel Corporation: *See*—
MacKay, Kenneth D., 4,239,699, Cl. 564-92.000.
Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Hiller, Gunter, 4,239,750, Cl. 424-94.000.

Henley, Virgil E.; Hineborg, James R.; and Nixdorf, Donald H., to General Tire & Rubber Company, The. Off-the-highway radial tire building system. 4,239,565, Cl. 156-126.000.
Henry, James W., to Eastman Kodak Company. Inspection of elongated material. 4,240,110, Cl. 358-107.000.
Hensel, Jorg: *See*—
Schreyer, Gerd; Geiger, Friedhelm; and Hensel, Jorg, 4,239,696, Cl. 260-513.00R.
Herbeck, Christian C.: *See*—
Geitner, Lawrence J.; and Herbeck, Christian C., 4,239,450, Cl. 415-160.000.
Herberts Gesellschaft mit beschrankter Haftung: *See*—
Nagel, Klaus, 4,239,814, Cl. 427-120.000.
Herbertz, Toni: *See*—
Reinehr, Ulrich; Jungverdorben, Herman-Josef; Herbertz, Toni; Dross, Joachim; and Hirsch, Rolf-Burkhard, 4,239,722, Cl. 264-206.000.
Herbst, Wilhelm: *See*—
Martin, Hans; and Herbst, Wilhelm, 4,239,145, Cl. 228-6.00R.
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., to Firestone Tire & Rubber Company, The. Amine terminated polymers and the formation of block copolymers. 4,239,860, Cl. 525-131.000.
Hergt, Peter; Buschsieper, Peter; and Matthias, Heinz-Bernd, to Klein, Schanzlin & Becker AG. Means for reducing cavitation-induced erosion of centrifugal pumps. 4,239,453, Cl. 415-182.000.
Hermann SCHWABE, Firma: *See*—
Decher, Friedrich; and Bachorz, Gunther, 4,240,057, Cl. 336-165.000.
Herold, Ludwig: *See*—
Brandt, Jurgen; Herold, Ludwig; Pikorz, Wolfgang; and Sonntag, Alois, 4,240,099, Cl. 357-79.000.
Herold, Robert J.: *See*—
Fabris, Hubert J.; Herold, Robert J.; and Schmucker, Arden E., 4,239,879, Cl. 528-76.000.
Herring, Michael T. A.; and Knight, Richard. Methods of portioning and portioning machines. 4,238,998, Cl. 100-41.000.
Heskett, Don E., to Fluid Power Research, Inc. Fluid treating method. 4,239,621, Cl. 210-687.000.
Hesse, David L.; and Warywoda, Joseph, to Bunker Ramo Corporation. Electrical connector. 4,239,317, Cl. 339-91.00R.
Hesse, David L.; Krolak, Ronald F.; and Perna, Jiulio E., to Bunker Ramo Corporation. Electrical connector. 4,239,320, Cl. 339-154.00A.
Hetrick, Vernon L., to Meyer Products, Inc. Lift arm with improved chain connector. 4,238,895, Cl. 37-41.000.
Heubach, Gunther; Sachse, Burkhard; and Burstell, Helmut, to Hoechst Aktiengesellschaft. 1,2,4-Triazole derivatives. 4,239,525, Cl. 71-92.000.
Hewlett-Packard Company: *See*—
Larson, John D., III, 4,240,003, Cl. 310-326.000.
Schrenker, Helge, 4,239,623, Cl. 210-96.100.
Hickey, Donald D. Push-pull exercise device. 4,239,212, Cl. 272-141.000.
Hickman, Ronald J.: *See*—
Breitung, Edward J.; and Hickman, Ronald J., 4,239,947, Cl. 200-61.890.
Hildebrandt, Eugene F.; Ottersbach, Thomas V.; and DeVries, Wayne J., to Emerson Electric Co. Motor starting switch. 4,240,001, Cl. 310-68.00E.
Hiller, Gunter, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Animal feeds containing a mixture of lincomycin or oleandomycin and proteolytic enzymes. 4,239,750, Cl. 424-94.000.
Hilti Aktiengesellschaft: *See*—
Siebrecht-Reuter, Gerd, 4,238,987, Cl. 85-83.000.
Hineborg, James R.: *See*—
Henley, Virgil E.; Hineborg, James R.; and Nixdorf, Donald H., 4,239,565, Cl. 156-126.000.
Hinova, Maya H.: *See*—
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Hinova, Maya H.; and Parushev, Stoyan P., 4,239,605, Cl. 204-59.00R.
Hinz, James E. Portable angling house. 4,239,247, Cl. 280-12.00S.
Hinze, Klaus; and Wisskirchen, Klaus B., to ITT Industries, Inc. Push-button switch. 4,239,950, Cl. 200-254.000.
Hiraki, Shunichi; Kumamaru, Kuniaki; Aoyama, Masaharu; and Yonezawa, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorine-doped P type silicon. 4,240,096, Cl. 357-63.000.
Hirako, Susumu: *See*—
Kobayashi, Yoshimichi; Tsuge, Yukio; and Hirako, Susumu, 4,239,878, Cl. 528-45.000.
Hirasawa, Kunio: *See*—
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Hirata, Hideyo: *See*—
Hakamada, Takeshi; Hirata, Hideyo; and Katoh, Toshio, 4,239,998, Cl. 310-45.000.
Hirohara, Hideo; Nabeshima, Shigeyasu; and Nagase, Tsuneyuki, to Sumitomo Chemical Company, Limited. Enzyme-immobilization carriers and preparation thereof. 4,239,854, Cl. 521-31.000.
Hirsch, Rolf-Burkhard: *See*—
Reinehr, Ulrich; Jungverdorben, Herman-Josef; Herbertz, Toni; Dross, Joachim; and Hirsch, Rolf-Burkhard, 4,239,722, Cl. 264-206.000.
Hitachi, Ltd.: *See*—
Fushimi, Kiyoshi; and Shimizu, Keizo, 4,240,114, Cl. 358-193.100.
Hakamada, Takeshi; Hirata, Hideyo; and Katoh, Toshio, 4,239,998, Cl. 310-45.000.
Inouye, Hiroshi, 4,239,124, Cl. 220-240.000.
Ito, Satoru, 4,239,559, Cl. 148-188.000.
Kamiya, Masanori, 4,240,115, Cl. 358-193.100.
Kawagoe, Hiroto, 4,240,151, Cl. 365-104.000.
Morooka, Yasuo; Tanifuji, Shinya; and Matsuka, Shigemichi, 4,240,147, Cl. 364-472.000.
Murakami, Kanji; Kawamoto, Mineo; Matsuda, Yoichi; Wajima, Motoyo; and Morishita, Hirosada, 4,239,813, Cl. 427-98.000.
Obara, Isao; Kamada, Atsuya; and Kaneda, Aizo, 4,239,944, Cl. 179-115.5VC.
Ohhinata, Ichiro, 4,239,985, Cl. 307-252.00G.
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,240,020, Cl. 318-721.000.
Sakamoto, Masakatsu; Uchida, Kenji; Honma, Isao; and Kamino, Yukishige, 4,239,423, Cl. 406-47.000.
Takanashi, Akira; and Masuda, Kenzo, 4,239,980, Cl. 307-205.000.
Tanaka, Toshio; and Nakagawa, Sumio, 4,239,478, Cl. 431-24.000.
Tsukushi, Masanori; Hirasawa, Kunio; and Kashimura, Katsuichi, 4,239,948, Cl. 200-148.00R.
Yatsuo, Tsutomu; Watanabe, Atsuo; and Shimizu, Yoshiteru, 4,240,091, Cl. 357-38.000.
Hitachi Metals, Ltd.: *See*—
Miyazaki, Takeshi, 4,239,533, Cl. 75-134.00F.
Hitachi Shipbuilding & Engineering Co., Ltd.: *See*—
Tomita, Yukio; and Nishio, Taketaro, 4,239,379, Cl. 355-52.000.
Hlavinka, Dennis J., to Cobe Laboratories, Inc. Potting pleated membrane. 4,239,625, Cl. 210-321.300.
Hobbs, Edwin L. Tree handling device. 4,239,188, Cl. 254-376.000.
Hobbs, James W.: *See*—
Campbell, Grover R.; and Hobbs, James W., 4,239,517, Cl. 62-37.000.
Hoda, Syed N.: *See*—
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,239,519, Cl. 65-2.000.
Hodes, Martin. Vitamin organizer. 4,239,121, Cl. 209-703.000.
Hodgkin, Alan F., to Babcock & Wilcox Limited. Fluidized bed combustion. 4,239,479, Cl. 431-170.000.
Hodgson, Charles E.: *See*—
Lessner, David L.; Macemon, James H.; Coker, George M., Jr; and Hodgson, Charles E., 4,239,391, Cl. 356-318.000.
Hodler, Fritz. Diecasting venting valve. 4,239,080, Cl. 164-305.000.
Hoechst Aktiengesellschaft: *See*—
Franke, Rainer; and Diedrich, Bernd, 4,239,650, Cl. 252-429.00B.
Heubach, Gunther; Sachse, Burkhard; and Burstell, Helmut, 4,239,525, Cl. 71-92.000.
Kolbe, Andreas; and Dinter, Peter, 4,239,973, Cl. 250-531.000.
Krause, Dieter; Topfer, Dieter; and Salzburg, Wolfgang, 4,239,368, Cl. 354-325.000.
Wiezer, Hartmut; Pfahler, Gerhard; and Mayer, Norbert, 4,239,891, Cl. 546-242.000.
Hoefke, Wolfgang: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, 4,239,764, Cl. 424-263.000.
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, to SKF Industrial Trading & Development Company B.V. Ball bearing for linear motion. 4,239,299, Cl. 308-6.00C.
Hoffmann-La Roche Inc.: *See*—
Kyburz, Emilio; and Aschwanden, Werner, 4,239,770, Cl. 424-274.000.
Hoffmann, Werner: *See*—
Rossy, Phillip; and Hoffmann, Werner, 4,239,897, Cl. 549-61.000.
Hogan, Stephen J.; and Nyland, Roger L., to Whirlpool Corporation. Ice maker apparatus. 4,238,930, Cl. 62-138.000.
Hogan, William F., to Spectrum X-Ray Corporation. Connector means. 4,239,412, Cl. 403-182.000.
Holl, Gordon D.; and Marcolina, Gene A. Animal trap. 4,238,902, Cl. 43-61.000.
Hollandsworth, William J.; and Grubbs, Dean O., to Hunter Engineering Company. Vehicle wheel and body alignment diagnosing system. 4,239,389, Cl. 356-155.000.
Hollowell, William M., to American Safety Equipment Corporation. Adjustable emergency locking buckle anchor. 4,239,260, Cl. 280-806.000.
Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A. Method of preparing vascular grafts of human and other umbilical cord origins for tissue ingrowth. 4,239,492, Cl. 8-94.110.
Holmen GmbH, Firma: *See*—
Kohler, Leo, 4,239,550, Cl. 106-314.000.
Holmes, Gordon W., to Professional Packaging Limited. Integrally-formed polymeric material coin holder. 4,239,051, Cl. 133-8.00R.
Holmes, Ronald, to Advanced Structures Corp. Bulkhead structure. 4,238,913, Cl. 52-238.000.
Holmes, Ronald W., to Commonwealth Industrial Gases Limited, The. Manual resuscitators. 4,239,038, Cl. 128-205.130.
Holzl, Robert A., to Chemetal Corporation. Deposition method and products. 4,239,819, Cl. 427-255.200.
Homan, Gary R.; and Lee, Chi-long, to Dow Corning Corporation. Oxygen-curable mercaptoorganosiloxane compositions catalyzed by cobaltocene compounds and method of forming higher molecular weight products therefrom. 4,239,674, Cl. 260-37.0SB.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Saruhashi, Kazuo; and Ogano, Takeo, 4,238,918, Cl. 56-202.000.

Honeywell Inc.: *See—*
Engel, Hans O.; and Lueneburg, Wolfgang, 4,239,178, Cl. 251-14.000.
Honeywell Information Systems Inc.: *See—*
Kindell, Jerry L.; and Flynn, Richard T., 4,240,144, Cl. 364-200.000.
Stafford, John P.; Inoshita, Minoru; and Winfrey, Gerald N., 4,240,140, Cl. 364-200.000.
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Rubin, Lawrence M., 4,240,037, Cl. 330-127.000.
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Hughes, Paul R.; and Campbell, John E., to United Brands Company. Thermostat. 4,240,077, Cl. 340-500.000.
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Hyre, Charles E., to Fennell Corporation. Fluid bed furnace and pilot light assembly. 4,239,480, Cl. 431-264.000.
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Inbar, Michael, to TRW Inc. Self-aligning fiber optic relay. 4,239,332, Cl. 350-96.200.
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Inouye, Hiroshi, to Hitachi, Ltd. Fluid-tight closure apparatus. 4,239,124, Cl. 220-240.000.
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Le Page, Jean-Francois; Martino, Germain; and Miquel, Jean, 4,239,652, Cl. 252-441.000.
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Bringol, Charles R., 4,240,075, Cl. 340-798.000.
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International Harvester Company: *See—*
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Interox Chemicals Limited: *See—*
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Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, to Daiichi Seiyaku Co., Ltd. 2-Aminotetralin derivatives and process for producing the same. 4,239,903, Cl. 560-73.000.
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Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, to Mitsubishi Gas Chemical Company, Inc. Process for producing hydrazine sulfate. 4,239,741, Cl. 423-388.000.
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Ives, Frank E. Impregnated fabric applicator with vibrating applicator rolls. 4,239,580, Cl. 156-468.000.
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Jacobs, Stanley C.: *See—*
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Jacobson, Alexander D.: *See—*
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Jacobson, Chester F.; and Poisson, Norman D., to Gillette Company, The. Scraper assembly with blade lock means. 4,238,883, Cl. 30-162.000.
Jacoponi, Stefano, to Fiat Auto S.p.A. Hydraulically damped automatic play compensation device for motor vehicle clutches. 4,239,098, Cl. 192-111.00A.
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Janson, Gunnar H., to Dana Corporation. Adjustable tensioner. 4,239,092, Cl. 188-267.000.
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Johnson, James A. Apparatus for use in balancing bus and truck wheels. 4,238,961, Cl. 73-480.000.
Johnson, Peter W., to Olin Corporation. Driver assembly for small-diameter fasteners. 4,239,143, Cl. 227-10.000.
Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-9-deoxy-5,9α-epoxy-2,3,4,5-tetradehydro-PGF_1 compounds. 4,239,909, Cl. 542-422.000.
Johnson, Tore R., to AMP Incorporated. Optical three rod waveguide connector. 4,239,334, Cl. 350-96.210.

Johnston, Robert J.; Colista, Dominic; Layciak, Stephen G.; and Dobrosielski, Stephen S., to Westinghouse Electric Corp. Switch operator with switch-mounting adapter. 4,239,946, Cl. 200-51.130.
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Jonker, Herman D., to U.S. Philips Corporation. Method of depositing a layer of magnetic bubble domain material on a monocrystalline substrate. 4,239,805, Cl. 428-446.000.
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Joubert, Raymond J. M.; and Bouiller, Jean G., to Societe' Nationale d'Etude et de Construction de Moteurs d'Aviation. Rotary exchanger for gas turbine installations. 4,238,927, Cl. 60-39.51H.
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Justice, Harry L., Sr.; Justice, Harry L., Jr.; and Watanuma, Yoshinori. Collapsible binocular and blank therefor. 4,239,328, Cl. 350-70.000.
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Kabushiki Kaisha Veno Seiyaku Oyo Kenkyujo: *See*—
Ueno, Ryuzo; Tsuchiya, Hiroaki; Muramoto, Yasukazu; and Kuwae, Yoshihiko, 4,239,913, Cl. 562-425.000.
Kagitani, Yoshio: *See*—
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,239,683, Cl. 260-239.30T.
Kahn, Ralph J., to Schlesinger Brothers, Inc. Carrying case. 4,239,074, Cl. 150-1.600.
Kai, Masanori: *See*—
Igarashi, Yousuke; Sakata, Minehiro; Kudo, Shuichi; Yokoyama, Yasuyuki; and Kai, Masanori, 4,239,371, Cl. 355-14.0CH.
Kaiser, Bernd-Ulrich: *See*—
Danziger, Harry; and Kaiser, Bernd-Ulrich, 4,239,682, Cl. 260-239.30A.
Kaiser, Dieter: *See*—
Ries, Karl; Lather, Dieter; Kaiser, Dieter; Hannoschock, Kurt; and Simoneit, Gunter, 4,238,963, Cl. 73-644.000.
Kaku, Kanji: *See*—
Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, 4,239,865, Cl. 525-327.000.
Kamada, Atsuya: *See*—
Obara, Isao; Kamada, Atsuya; and Kaneda, Aizo, 4,239,944, Cl. 179-115.5VC.
Kameswaran, Venkataraman: *See*—
Berkelhammer, Gerald; and Kameswaran, Venkataraman, 4,239,777, Cl. 424-304.000.
Kamino, Yukishige: *See*—
Sakamoto, Masakatsu; Uchida, Kenji; Honma, Isao; and Kamino, Yukishige, 4,239,423, Cl. 406-47.000.
Kamiya, Masanori, to Hitachi, Ltd. Channel selection voltage generator. 4,240,115, Cl. 358-193.100.
Kampmann, Frank S. Stereo separation control. 4,239,937, Cl. 179-1.00G.
Kamyr, Inc.: *See*—
Prough, James R., 4,239,590, Cl. 162-49.000.
Sherman, Michael I., 4,239,470, Cl. 418-153.000.
Kanao, Munefumi: *See*—
Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, 4,239,903, Cl. 560-73.000.
Kandyba, Petr E.; Kolesnikov, Dmitry P.; Komarovskikh, Nina I.; Lavrischev, Vadim P.; Lapir, Gennady M.; Makhov, Vladimir I.; Semenov, Vasily K.; and Samus, Anatoly N. Film cryotron. 4,240,086, Cl. 357-4.000.
Kane, Vinayak V., to Ortho Pharmaceutical Corporation. Total synthesis of the utero-evacuant substance d,l-zoapatanol. 4,239,689, Cl. 260-333.000.
Kaneda, Aizo: *See*—
Obara, Isao; Kamada, Atsuya; and Kaneda, Aizo, 4,239,944, Cl. 179-115.5VC.
Kanegae, Hidetoshi, to Nissan Motor Company, Limited. Control system. 4,238,924, Cl. 60-39.28R.
Kantner, Otto: *See*—
Freudenschuss, Otto; Kantner, Otto; and Kittag, Gerd, 4,239,356, Cl. 354-23.00R.
Karl, Walter, to Utilux Pty. Limited. Electric cable processing. 4,238,981, Cl. 83-151.000.
Karn, Helmut: *See*—
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,239,895, Cl. 548-341.000.
Karnofsky, George B. Process and apparatus for solvent extraction of oil from oil-containing diatomite ore. 4,239,617, Cl. 208-321.000.
Kasahara, Nobuo: *See*—
Tatsumi, Susumu; Ikesue, Masumi; Hosaka, Masao; and Kasahara, Nobuo, 4,239,374, Cl. 355-14.00E.
Kasai, Yoshio: *See*—
Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, 4,239,903, Cl. 560-73.000.
Kashima, Yoshinobu; and Yoshida, Makoto, to Citizen Watch Co., Ltd. Solar cell battery charging control system. 4,240,021, Cl. 320-2.000.
Kashimura, Katsuichi: *See*—
Tsukushi, Masanori; Hirasawa, Kunio; and Kashimura, Katsuichi, 4,239,948, Cl. 200-148.00R.
Kashiwada, Toshinobu: *See*—
Okumura, Osamu; Sakatani, Takenobu; Kashiwada, Toshinobu; and Tokuyama, Kiyotaka, 4,239,662, Cl. 252-555.000.
Kasinoff, Alan M.: *See*—
Oates, Robert M.; Neuner, James A.; Couch, Robert D., Jr.; and Kasinoff, Alan M., 4,239,595, Cl. 176-19.00R.
Kasten, Walter, to X Incorporated. Landscape blanket. 4,239,824, Cl. 428-13.000.
Kataoka, Hiroshi. Multicolor rotogravure printing system. 4,239,001, Cl. 101-152.000.
Katayama, Akira; and Hozumi, Toshiaki, to Nippon Kogaku K.K. Camera film advancing apparatus. 4,239,362, Cl. 354-212.000.
Kato, Hajime; and Ogata, Yasuhiro, to Fuji Photo Film Co., Ltd. Method of producing recording sheets. 4,239,815, Cl. 427-150.000.
Kato, Hisatoyo: *See*—
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, 4,239,968, Cl. 250-327.100.
Katoh, Toshio: *See*—
Hakamada, Takeshi; Hirata, Hideyo; and Katoh, Toshio, 4,239,998, Cl. 310-45.000.
Kaub, Manfred, to Girling Limited. Control valve assemblies. 4,239,296, Cl. 303-24.00A.
Kauffman, Robert N.: *See*—
Smith, James D. B.; and Kauffman, Robert N., 4,239,802, Cl. 428-377.000.
Kaufman, Lawrence G.: *See*—
Ginsberg, Thomas; and Kaufman, Lawrence G., 4,239,539, Cl. 106-1.170.
Kaulfuss Designers Incorporated: *See*—
Kaulfuss, William P.; and Kaulfuss, Robert H., 4,239,825, Cl. 428-16.000.
Kaulfuss, Robert H.: *See*—
Kaulfuss, William P.; and Kaulfuss, Robert H., 4,239,825, Cl. 428-16.000.
Kaulfuss, William P.; and Kaulfuss, Robert H., to Kaulfuss Designers Incorporated. Bird ornament. 4,239,825, Cl. 428-16.000.
Kawagoe, Hiroto, to Hitachi, Ltd. Semiconductor read only memory. 4,240,151, Cl. 365-104.000.
Kawamoto, Mineo: *See*—
Murakami, Kanji; Kawamoto, Mineo; Matsuda, Yoichi; Wajima, Motoyo; and Morishita, Hirosada, 4,239,813, Cl. 427-98.000.
Kawasaki Steel Corporation: *See*—
Tsubota, Kazuya, 4,238,946, Cl. 72-199.000.
Kawazoe, Michio. Holding device for attaching a device such as a camera bracket. 4,240,129, Cl. 362-3.000.
Kazakov, Evgeny A.: *See*—
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin

A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.

Kealoha, Gregory. Diver's floater. 4,238,864, Cl. 9-8.00R.

Kearney-National Inc.: *See*—
Westrom, Arthur C., 4,240,124, Cl. 361-127.000.

Keeley, Donald E., to General Electric Company. Meta, para-substituted isopropylidene bisphenols and methods for making. 4,239,918, Cl. 568-640.000.

Kellar, Paul R. N.: *See*—
Taylor, Richard J.; and Kellar, Paul R. N., 4,240,104, Cl. 358-22.000.

Keller, Roderich, to GSI Gesellschaft fuer Schwerionenforschung m.b.H. Apparatus for the generation of primary electrons from a cathode. 4,240,005, Cl. 313-231.000.

Kelly, David; Vidal, Michael; and Rosenthal, Saul, to Professional Chemical & Color, Inc. Carpet dyeing system. 4,239,490, Cl. 8-499.000.

Kelson, Richard D. Self lubricating sabot. 4,239,006, Cl. 102-93.000.

Kemlage, Bernard M., to International Business Machines Corporation. Low pressure chemical vapor deposition of silicon dioxide with oxygen enhancement of the chlorosilane-nitrous oxide reaction. 4,239,811, Cl. 427-95.000.

Kemp, Gail W. Seals for a rotary machine. 4,239,469, Cl. 418-117.000.

Kempe, Uwe: *See*—
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,239,895, Cl. 548-341.000.

Kemper, Yves J., to Vadetec Corporation. Infinitely variable power transmission and system. 4,238,976, Cl. 74-682.000.

Kennedy, Richard W.: *See*—
Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., 4,239,560, Cl. 148-189.000.

Kenton, Joseph R.: *See*—
Wilson, Joseph F.; Fodor, Lawrence M.; and Kenton, Joseph R., 4,239,522, Cl. 71-29.000.

Kerr-McGee Refining Corporation: *See*—
Gearhart, Junior A., 4,239,616, Cl. 208-309.000.

Kerry, John C.; and Weighton, David M., to Boots Company Limited, The. Pesticidal compositions containng 1,3,5-triazapenta-1,4-diene and organo-tin oxide compounds. 4,239,774, Cl. 424-288.000.

Kerwin, Daniel, to Meyercord Co., The. Method and machine for transferring indicia to tapered articles. 4,239,570, Cl. 156-163.000.

Kesl, Elmer M.; Quade, Henry H.; and Sammarco, Peter, to International Harvester Company. Corn snapping header frame. 4,238,916, Cl. 56-106.000.

Kesling, Haven S., Jr., to Atlantic Richfield Company. Process for the preparation of urethanes. 4,239,904, Cl. 560-157.000.

Khan, Riaz A.: *See*—
Richards, Alan C.; and Khan, Riaz A., 4,239,665, Cl. 260-17.200.

Khutoretsky, Gary M.: *See*—
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,239,999, Cl. 310-52.000.

Kiehs, Karl: *See*—
Loeffler, Hans-Peter; Kiehs, Karl; and Adolphi, Heinrich, 4,239,775, Cl. 424-300.000.

Kii, Masami; Ueda, Yoshihiro; and Ibuki, Koji, to Mitsubishi Denki Kabushiki Kaisha. Self-extinguishing type circuit interrupter. 4,239,949, Cl. 200-148.00R.

Kijima, Yasuhiko: *See*—
Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, 4,239,698, Cl. 260-549.000.

Kilinskis, David C.; and Vassos, Louis J., to Skil Corporation. Battery charging circuit for portable power tool. 4,240,022, Cl. 320-23.000.

Kimata, Kei; Nakazeki, Tsugio; and Yasuda, Yoshinobu, to N T N Toyo Bearing Co. Ltd. Air flow measuring device for internal combustion engines. 4,239,028, Cl. 123-389.000.

Kimura, Tsuneo; Kohyama, Katsuhisa; Okada, Takehiro; and Sakata, Katsuyuki, to Mitsubishi Chemical Industries Ltd. Process for producing polyester. 4,239,882, Cl. 528-209.000.

Kindell, Jerry L.; and Flynn, Richard T., to Honeywell Information Systems Inc. Long operand alignment and merge operation. 4,240,144, Cl. 364-200.000.

Kindig, James K.; and Turner, Ronald L., to Hazen Research, Inc. Process for beneficiating sulfide ores. 4,239,529, Cl. 75-1.00R.

King, John F.; and Unsworth, William. Magnesium alloys. 4,239,535, Cl. 75-168.00D.

King, Lloyd H., Sr. Attachments for pipes. 4,239,265, Cl. 285-197.000.

Kingry, Gary W., to Procter & Gamble Company, The. Detergent composition comprising a hydrolyzable cationic surfactant and specific alkalinity source. 4,239,660, Cl. 252-528.000.

Kinoshita, Tsukuru; Masuda, Shuji; and Hasegawa, Tetuo, to Otsuka Chemical Co., Ltd. Water-soluble flame retarder and process for preparing the same. 4,239,542, Cl. 106-18.140.

Kinrade, John D.: *See*—
Robbins, John C.; and Kinrade, John D., 4,239,964, Cl. 250-255.000.

Kirkevold, Kent A.: *See*—
Knope, Constance J.; and Kirkevold, Kent A., 4,239,828, Cl. 428-64.000.

Kita, Nobuyuki; Uchida, Toshio; Ikeda, Sadaharu; and Sato, Shigeru, to Fuji Photo Film Co., Ltd. Photopolymerizable composition. 4,239,850, Cl. 430-281.000.

Kitamura, Kazuhiko; and Satomoto, Atsushi, to Aisin Seiki Kabushiki Kaisha. Temperature responsive valve assembly. 4,239,152, Cl. 236-48.00R.

Kitamura, Sadafumi: *See*—
Hasegawa, Kenichi; Taniguchi, Hiroshi; and Kitamura, Sadafumi, 4,240,038, Cl. 330-149.000.

Kitamura, Yasunori: *See*—
Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, 4,239,358, Cl. 354-60.00E.

Kittag, Gerd: *See*—
Freudenschuss, Otto; Kantner, Otto; and Kittag, Gerd, 4,239,356, Cl. 354-23.00R.

Kiyokawa, Shin; and Sakaguchi, Shokichi, to Misato Plaheat Mfg. Ltd. House and method for livestock raising. 4,239,020, Cl. 119-16.000.

Kjoller, Hans O. S., to Telefonaktiebolaget L M Ericsson. Apparatus for inserting instructions in a control sequence in a stored program controlled telecommunication system. 4,240,136, Cl. 364-200.000.

Klafft & Kluppelholz: *See*—
Krause, Bruno, 4,238,969, Cl. 74-411.500.

Klauke, Erich: *See*—
Kramer, Wolfgang; Klauke, Erich; and Roessler, Peter, 4,239,762, Cl. 424-254.000.

Klaus, Gerald R., to Fellowes Manufacturing Company. File frame. 4,239,306, Cl. 312-111.000.

Klein, Herbert H., to Unarco Industries, Inc. Reinforced storage rack. 4,239,122, Cl. 211-182.000.

Klein, Howard P.: *See*—
Zimmerman, Robert L.; McEntire, Edward E.; and Klein, Howard P., 4,239,916, Cl. 562-574.000.

Klein, Max. Porous media to separate gases liquid droplets and/or solid particles from gases or vapors and coalesce entrained droplets. 4,239,516, Cl. 55-389.000.

Klein, Schanzlin & Becker AG.: *See*—
Hergt, Peter; Buschsieper, Peter; and Matthias, Heinz-Bernd, 4,239,453, Cl. 415-182.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, 4,239,462, Cl. 417-373.000.

Kleinschmager, Herbert: *See*—
Hartmann, Bernd; and Kleinschmager, Herbert, 4,239,837, Cl. 429-104.000.

Klepp, Christian: *See*—
Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, 4,239,462, Cl. 417-373.000.

Kleykamp, Donald L.; and Neroni, Peter J., to Dayco Corporation. Railway truck pedestal liner. 4,239,007, Cl. 105-225.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Streicher, Kurt; and Nieden, Achim zur, 4,239,026, Cl. 123-196.00R.

Knapp, Warren S.: *See*—
Slack, Glen A.; and Knapp, Warren S., 4,239,502, Cl. 51-295.000.

Kneip, George D., Jr.: *See*—
Anderson, Marvin H.; Chmyz, George; Daus, Carl D.; and Kneip, George D., Jr., 4,240,033, Cl. 324-321.000.

Kneuper, Wolfgang: *See*—
Enke, Peter; Schlickmann, Helmut; Kneuper, Wolfgang; Frohberg, Ekkehard; Mink, Arno; and Weidenmuller, Jurgen, 4,239,110, Cl. 206-396.000.

Knight, Hester L. Hard to reach places spray can. 4,239,407, Cl. 401-190.000.

Knight, Kerry G.: *See*—
Greacen, John F.; Knight, Kerry G.; and Lech, Thaddeus, Jr., 4,239,097, Cl. 192-106.200.

Knight, Richard: *See*—
Herring, Michael T. A.; and Knight, Richard, 4,238,998, Cl. 100-41.000.

Knoll AG: *See*—
Bub, Oskar, 4,239,684, Cl. 424-244.000.

Knope, Constance J.; and Kirkevold, Kent A., to Minnesota Mining and Manufacturing Company. Self-lubricating magnetic recording diskette. 4,239,828, Cl. 428-64.000.

Knott, Jack E., II; and Wang, James C., to American Can Company. Multi-layer barrier film. 4,239,826, Cl. 428-35.000.

Knutti, Helmut: *See*—
Aurin, Friedrich; and Knutti, Helmut, 4,239,342, Cl. 350-294.000.

Kobayashi, Yoshimichi; Tsuge, Yukio; and Hirako, Susumu, to Mitsubishi Chemical Industries Ltd. Process for preparing cationic electrodeposition-coating resin using monofunctional blocking agents and tertiary amines having at least two hydroxy groups. 4,239,878, Cl. 528-45.000.

Kobe Steel, Limited: *See*—
Takeuchi, Sinya, 4,239,000, Cl. 101-129.000.

Kobylinski, Thaddeus P.: *See*—
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,704, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,705, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,924, Cl. 568-902.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,925, Cl. 568-902.000.

Koch, Friedo, to Hauni-Werke Korber & Co. KG. Method and apparatus for monitoring and controlling the production of composite filter mouthpieces for cigarettes or the like. 4,238,994, Cl. 493-4.000.

Kodama, Kenjiro; and Morozumi, Manami, to Yamasa Shoyu Kabushiki Kaisha; and Saneyoshi, Mineo. 1-β-D-Arabinofuranosylcytosine-5'-oleyl phosphate and salts thereof. 4,239,905, Cl. 536-29.000.

Koel, Gerrit J.; and Postma, Lambertus, to U.S. Philips Corporation. Method of manufacturing a thin-film magnetic head with a nickel-iron pattern having inclined edges. 4,239,587, Cl. 156-659.100.

Koenitzer, Joachim; Schmitz, Heinrich; and Jindra, Kurt, to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte. Process and apparatus for coating one side of a metal strip with molten metal. 4,239,817, Cl. 427-211.000.

Kofink, Wolfgang, to Robert Bosch GmbH. Method and system to supply electrical energy to a self-contained electrical network at multiple voltage level, multiple power range, particularly for mobile application. 4,239,978, Cl. 307-16.000.

Kohl, Franz, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for the production of high purity silicon monocrystals having a low oxygen content. 4,239,585, Cl. 156-617.0SP.

Kohler, Leo, to Holmen GmbH, Firma. Flowing agent for concrete and mortar and process for producing the same. 4,239,550, Cl. 106-314.000.

Kohler, Thomas P., to General Electric Company. Linearized three-state switching amplifier. 4,240,036, Cl. 330-10.000.

Kohyama, Katsuhisa: *See*—
Kimura, Tsuneo; Kohyama, Katsuhisa; Okada, Takehiro; and Sakata, Katsuyuki, 4,239,882, Cl. 528-209.000.

Kolb, William P., Jr.; and Schmidt, Keith G., to Hughes Aircraft Company. Mount for a laser Brewster angle window. 4,240,046, Cl. 331-94.50D.

Kolbe, Andreas; and Dinter, Peter, to Hoechst Aktiengesellschaft. Device for the surface treatment of film webs by means of electrical corona discharge. 4,239,973, Cl. 250-531.000.

Kolesnikov, Dmitry P.: *See*—
Kandyba, Petr E.; Kolesnikov, Dmitry P.; Komarovskikh, Nina I.; Lavrischev, Vadim P.; Lapir, Gennady M.; Makhov, Vladimir I.; Semenov, Vasily K.; and Samus, Anatoly N., 4,240,086, Cl. 357-4.000.

Koll, Gunter: *See*—
Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, 4,239,462, Cl. 417-373.000.

Koller, Bruno. Contact lenses having specially profiled cross sections. 4,239,353, Cl. 351-160.00H.

Komarovskikh, Nina I.: *See*—
Kandyba, Petr E.; Kolesnikov, Dmitry P.; Komarovskikh, Nina I.; Lavrischev, Vadim P.; Lapir, Gennady M.; Makhov, Vladimir I.; Semenov, Vasily K.; and Samus, Anatoly N., 4,240,086, Cl. 357-4.000.

Komatsu, Nobuhiko: *See*—
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,239,683, Cl. 260-239.30T.

Komatsubara, Michimasa; and Shimizu, Ikuo, to Sony Corporation. Signal transmission in teaching system. 4,238,893, Cl. 434-351.000.

Komendowski, Henry: *See*—
Weiler, Gerhard H.; and Komendowski, Henry, 4,239,726, Cl. 264-525.000.

Konars, Clement R.; Quinci, Emanuel; and Vascotto, Mario, to Halm Instrument Co., Inc. High speed document sorting means. 4,239,117, Cl. 209-553.000.

Kondo, Isao, to Olympus Optical Co., Ltd. Signal system. 4,239,984, Cl. 307-237.000.

Kondo, Takao: *See*—
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.

Kondoh, Shiroh: *See*—
Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, 4,239,656, Cl. 252-462.000.

Kondratiev, Alexandr V.: *See*—
Vasiliev, Petr E.; Dvornin, Vladimir S.; Kondratiev, Alexandr V.; and Kravchenko, Vladimir F., 4,240,141, Cl. 318-114.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Iwai, Fumio, 4,239,372, Cl. 355-14.00R.

Konrath, Karl; and Schwarz, Manfred, to Robert Bosch GmbH. RPM regulator for fuel injection pumps. 4,239,025, Cl. 123-366.000.

Koopmann, Rudiger; and Juffa, Richard, to Bayer Aktiengesellschaft. Method of determining characteristic rheological quantities of visco-elastic materials. 4,238,952, Cl. 73-15.600.

Koppe, Herbert: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, 4,239,764, Cl. 424-263.000.

Koppers Company, Inc.: *See*—
Edgar, William D., 4,239,600, Cl. 202-138.000.

Koren, Paul P.: *See*—
Nelson, Hugh A.; Wafer, John A.; Koren, Paul P.; Salemi, Nicholas A.; and Maier, Alfred E., 4,240,053, Cl. 335-16.000.

Koshelenko, Gennady P.: *See*—
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.

Kostelnick, Joseph J., to Bell Telephone Laboratories, Incorporated. Waveguide junction circulator having spurious mode absorbing means. 4,240,049, Cl. 333-1.100.

Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, to Fuji Photo Film Co., Ltd. Method and apparatus for recording and reproducing a radiation image. 4,239,968, Cl. 250-327.100.

Kovac, Zlata: *See*—
Blum, Samuel E.; Kovac, Zlata; and von Gutfeld, Robert J., 4,239,789, Cl. 427-53.100.

Kowalski, Daniel J., to Four Star Corporation. Article carrier comprising slotted side rail with slidable cross-rail and bracket therefor. 4,239,138, Cl. 224-321.000.

Kowalski, Xavier, to Monsanto Company. Peroxide stabilization. 4,239,643, Cl. 252-182.000.

Kowalyshyn, Stephen; and Voorhees, John C., to United States of America, Navy. Homing torpedo control apparatus. 4,239,012, Cl. 114-23.000.

Kozacka, Frederick J.; and Belcher, Richard A., to Gould Inc. Fuse terminal connector for one or more electric fuses. 4,240,058, Cl. 337-231.000.

Kozaki, Toshiaki: *See*—
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.

Kozlowski, Kazimierz: *See*—
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Krainev, Alexandr F.: *See*—
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.

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Murphy, Peter; Dionne, Yvon O.; Kral, Jerry J.; and Stefaniszyn, John, 4,240,026, Cl. 324-54.000.

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Kranz, Paul J., to Asarco Incorporated. Side dam apparatus for use in twin-belt continuous casting machines. 4,239,081, Cl. 164-431.000.

Kraus, Peter: *See*—
Sasse, Klaus; Gauss, Walter; Frohberger, Paul-Ernst; Kraus, Peter; and Paul, Volker, 4,239,760, Cl. 424-249.000.

Krause, Bruno, to Klafft & Kluppelholz. Mechanical gearing for roller blinds and awnings. 4,238,969, Cl. 74-411.500.

Krause, Dieter; Topfer, Dieter; and Salzburg, Wolfgang, to Hoechst Aktiengesellschaft. Apparatus for developing printing plates comprising a tank in which processing liquid is contained. 4,239,368, Cl. 354-325.000.

Krause, Fred E.: *See*—
Stamm, Robert H.; and Krause, Fred E., 4,238,878, Cl. 29-421.00R.

Krause, Gerhard; and Spaeth, Werner, to Siemens Aktiengesellschaft. Screening electrodes for optical semiconductor components. 4,240,087, Cl. 357-19.000.

Krauss, Werner, to Claudius Peters AG. Vertical silo for fluid bulk material with an inner blending chamber. 4,239,421, Cl. 406-12.000.

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Vasiliev, Petr E.; Dvornin, Vladimir S.; Kondratiev, Alexandr V.; and Kravchenko, Vladimir F., 4,240,141, Cl. 318-114.000.

Kreuzer, Andreas. Basketball table game. 4,239,218, Cl. 273-85.00E.

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Hesse, David L.; Krolak, Ronald F.; and Perna, Jiulio E., 4,239,320, Cl. 339-154.00A.

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Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., 4,239,060, Cl. 137-587.000.
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Krupp, Carroll P.; and Straga, Ivan T., to B. F. Goodrich. Pump end swivel for hose. 4,239,262, Cl. 285-61.000.
Krupp-Koppers GmbH: *See*—
Austermuhle, Friedrich-Paul, 4,239,511, Cl. 55-84.000.
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Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,239,519, Cl. 65-2.000.
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Kuehnle, Manfred R., to Coulter Systems Corp. Corona generating element. 4,240,125, Cl. 361-230.000.
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Gross, Albert; and Ege, Werner, 4,239,113, Cl. 206-568.000.
Kumamaru, Kuniaki: *See*—
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Iijima, Yasuo; Shinohara, Koichi; Fujita, Takashi; Odagiri, Masaru; and Kunieda, Toshiaki, 4,239,835, Cl. 428-611.000.
Kunz, Bernard L.: *See*—
Williams, Steven E.; and Kunz, Bernard L., 4,239,177, Cl. 251-11.000.
Kuo, Chang-Kiang, to Texas Instruments Incorporated. Random access memory cell with different capacitor and transistor oxide thickness. 4,240,092, Cl. 357-41.000.
Kupersmit, Julius B. Combination clip and seal construction for shipping containers. 4,239,149, Cl. 229-45.00R.
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Kurita, Takaji, to Minolta Camera Kabushiki Kaisha. Electrophotocopying machine for production of colored photocopies. 4,239,370, Cl. 355-4.000.
Kurita, Toshiaki, to Tomy Kogyo Co., Inc. Target game and components thereof. 4,239,220, Cl. 273-127.00R.
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Kurokawa, Hiromichi; Nakamura, Yasuo; Gando, Masayoshi; Okada, Haruhiko; Yamazaki, Masaru; and Yamanaka, Hideo, to Sony Corporation. Photoconductive layer and target structure for image pickup tube. 4,240,006, Cl. 313-386.000.
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Kwong, Gary W. Y., to UOP Inc. Additives for hydrocarbon oils. 4,239,497, Cl. 44-72.000.
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Monigold, Larry E.; and Cadwell, Ronald G., 4,239,153, Cl. 236-86.000.
La Bate, James B., to Insul Company, Inc. Ascension pipe elbow lid for coke ovens. 4,239,602, Cl. 202-242.000.
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Lacaze, Leonard, Jr., to International Telephone and Telegraph Corporation. Electrical connector. 4,239,315, Cl. 339-89.00M.
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Lacombat, Michel; Graffin, Jean C.; and Antoine, Robert, to Thomson-CSF. Optical projection system equipped with a plate positioner. 4,239,381, Cl. 355-53.000.
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Lambert, Lloyd J., Jr. Arm curl machine. 4,239,210, Cl. 272-118.000.
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Lampkin, Curtis M.; Roderick, Guy A.; and Nikodem, Robert B., to Photon Power, Inc. Method for quality film formation. 4,239,809, Cl. 427-74.000.
Lane, G. William. Wall-mounted eyeglass holder. 4,239,167, Cl. 248-205.00A.
Lang, Dorothy M. Toy displaying erratic tumbling movement. 4,238,904, Cl. 46-1.00R.
Lang, John N. Apparatus for sealing lap joints of fusible roofing sheets. 4,239,581, Cl. 156-497.000.
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Lange, Howard B., Jr.: *See*—
Bhada, Rohinton K.; Lange, Howard B., Jr.; and Strom, Stephen S., 4,239,996, Cl. 310-11.000.
Langer, William J., to MTS Systems Corporation. Flat belt tire tester. 4,238,954, Cl. 73-146.000.
Langford, R. C. Remote reset. 4,239,457, Cl. 417-33.000.
Lanz, William E.; and Stepe, Visvaldis A., to Caterpillar Tractor Co. Cutting edge assembly for a loader bucket. 4,238,896, Cl. 37-141.00R.
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Lasar, Theodore. Photoelectric light curtain using retroreflector. 4,239,961, Cl. 250-221.000.
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Lay, Joachim E. Rotary internal stage combustion engine. 4,239,027, Cl. 123-203.000.

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Rossetti, Pierre C., 4,240,095, Cl. 357-49.000.
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De Fouw, Eugene A.; and Baker, Peter M., 4,239,309, Cl. 312-221.000.
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Leatherman, Timothy S. Pocket multiple tool. 4,238,862, Cl. 7-128.000.
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Lech, Thaddeus, Jr.: *See*—
Greacen, John F.; Knight, Kerry G.; and Lech, Thaddeus, Jr., 4,239,097, Cl. 192-106.200.
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Lee, Gim F., Jr., to General Electric Company. Composition of a polyphenylene ether, a block copolymer of a vinyl aromatic compound and a conjugated diene and a polyolefin. 4,239,673, Cl. 260-30.60R.
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Legrow, Gary E.; and Gauthier, Laura A., to Dow Corning Corporation. Inhibited curable solventless organopolysiloxane compositions. 4,239,867, Cl. 525-478.000.
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Gilbert, Lawrence A.; and Leist, Jeffrey R., 4,239,639, Cl. 252-90.000.
Lemoine, Kenneth D. Water distiller with volatiile pollutants removal stage. 4,239,601, Cl. 202-176.000.
Lendi, Georges; and Voinescu, Nicolae, to Tesa S.A. Instrument for measurement and verification of linear dimensions. 4,238,885, Cl. 33-143.00L.
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Frye, Kenneth G., 4,239,141, Cl. 226-7.000.
Lenox, Thomas G., to United Technologies Corporation. Cylindrical encoder for use with fiber optics. 4,240,066, Cl. 340-870.290.
Leone, Richard P., to Lowell Corporation. Torque wrench. 4,238,978, Cl. 81-480.000.
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Lessner, David L.; Macemon, James H.; Coker, George M., Jr; and Hodgson, Charles E., to Baxter Travenol Laboratories, Inc. Modular motorized polarizers for a spectrofluorometer. 4,239,391, Cl. 356-318.000.
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Russell, Stephen E.; Story, Phillip M.; and Letcher, C. S., 4,239,546, Cl. 106-270.000.
Leuzzi, Ennio. Hair curler. 4,239,050, Cl. 132-40.000.
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Okumura, Osamu; Sakatani, Takenobu; Kashiwada, Toshinobu; and Tokuyama, Kiyotaka, 4,239,662, Cl. 252-555.000.
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Lipson, Melvin A.; and Zador, Eugene, to Dynachem Corporation. Polymers for aqueous processed photoresists. 4,239,849, Cl. 430-281.000.
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Livesay, Richard E., to Caterpillar Tractor Co. Radial face seal. 4,239,297, Cl. 305-11.000.
Lloyd, Randahl B., to Hughes Aircraft Company. Compact liquid crystal display system. 4,239,346, Cl. 350-334.000.
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Lockett, James F., to Geosource Inc. Sorting apparatus having automatic nulling arrangement. 4,239,118, Cl. 209-581.000.
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Loeffler, Hans-Peter; Kiehs, Karl; and Adolphi, Heinrich, to BASF Aktiengesellschaft. 2-(1-Methylpropyn-2-yl-thio)-phenyl-N-methylcarbamate and its use for combating pests of the Acarina order. 4,239,775, Cl. 424-300.000.
Login, Robert B., to BASF Wyandotte Corporation. Synthetic fibers having improved antistatic properties. 4,239,801, Cl. 428-364.000.
Lohr, Warren G.: *See*—
Brownlee, Sherwood S.; Grubb, Frederick H., Jr.; and Lohr, Warren G., 4,239,311, Cl. 312-305.000.
Long, John G.: *See*—
Aston, Keith; and Long, John G., 4,239,382, Cl. 355-63.000.
Long, Richard L., to United States of America, Army. Manifold insulated with knitted impregnated sleeve. 4,239,063, Cl. 138-123.000.
Longnecker, Russell D. Product dispensing measuring device. 4,239,128, Cl. 222-1.000.
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Beretta, David; Loveless, Frederick C.; and Nudenberg, Walter, 4,239,638, Cl. 252-73.000.
Lowe, Walter D. Valve. 4,239,185, Cl. 251-164.000.
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Lowitz, Joachim: *See*—
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Lowther, Frank E., to Purification Sciences Inc. Gas turbine system with oxygen vapor-fuel system. 4,238,925, Cl. 60-39.46R.
Luca', Sebastiano, to Lukas Beddy di Luca Sebastiano & C.S.a.s. Chair or sofa convertible into a bed. 4,239,281, Cl. 297-108.000.
Lucht Engineering, Inc.: *See*—
Rasmussen, William R., Jr., 4,239,377, Cl. 355-29.000.
Ludlow Corporation: *See*—
Allard, Adrien W., 4,239,794, Cl. 428-219.000.
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Lugosi, Gyorgy: *See*—
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Lutz, Bruce C.: *See*—
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MacGraw, Richard, II. Sculptural objects. 4,238,905, Cl. 46-25.000.
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Mitsu, Petrochemical Industries, Ltd.: *See—*
Hashimoto, Isao; Nakagawa, Hiroaki; Taguchi, Toru; and Nambu, Hirohiko, 4,239,921, Cl. 568-753.000.
Mitsubishi Chemical Industries Ltd.: *See—*
Kimura, Tsuneo; Kohyama, Katsuhisa; Okada, Takehiro; and Sakata, Katsuyuki, 4,239,882, Cl. 528-209.000.
Kobayashi, Yoshimichi; Tsuge, Yukio; and Hirako, Susumu, 4,239,878, Cl. 528-45.000.
Matsuura, Junichi; and Yamaguchi, Yukio, 4,239,793, Cl. 428-216.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Akamatsu, Masahiko, 4,239,988, Cl. 307-254.000.
Hotta, Shigenori, 4,240,123, Cl. 361-96.000.
Kii, Masami; Ueda, Yoshihiro; and Ibuki, Koji, 4,239,949, Cl. 200-148.00R.
Morishita, Mitsuharu; and Iwatani, Shiroh, 4,239,558, Cl. 148-175.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, 4,239,698, Cl. 260-549.000.
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Nakabayashi, Yasuyuki; Nagata, Kenichi; and Fukuda, Shozo, 4,239,426, Cl. 406-197.000.
Mitsubishi Petrochemical Co. Ltd.: *See—*
Takahashi, Kunimasa; and Yokoi, Takashi, 4,239,928, Cl. 585-431.000.
Mitsui Petrochemical Industries Ltd.: *See—*
Fukui, Kunisuke, 4,239,871, Cl. 526-73.000.
Nambu, Hirohiko; Mizuno, Kenichi; and Matumoto, Tetuhiro, 4,239,644, Cl. 252-186.000.
Miura, Isamu. Clamping apparatus for a guillotine type cutter. 4,239,199, Cl. 269-266.000.
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Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.
Miyagawa, Tuyoshi; and Arikawa, Junichi, to Laurel Bank Machine Co., Ltd. Construction of a counting section in a paper counting machine. 4,239,204, Cl. 271-171.000.
Miyahara, Junji: *See—*
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, 4,239,968, Cl. 250-327.100.
Miyahara, Shigeru: *See—*
Inaba, Masao; Sugimoto, Atsumi; and Miyahara, Shigeru, 4,240,112, Cl. 358-160.000.
Miyakawa, Hideaki: *See—*
Shimizu, Masami; Hashimoto, Teiji; Miyakawa, Hideaki; Uchidoi, Masanori; Aizawa, Hiroshi; and Ito, Tadashi, 4,240,055, Cl. 335-234.000.
Miyake, Tetsuya; Noguchi, Kohji; and Imamura, Kazuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing pyridine bases. 4,239,892, Cl. 546-251.000.
Miyashita, Hideo: *See—*
Inaba, Hajimu; and Miyashita, Hideo, 4,240,016, Cl. 318-562.000.
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Miyazaki, Takeshi, to Hitachi Metals, Ltd. Magnetic alloy having a low melting point. 4,239,533, Cl. 75-134.00F.
Mizelle, Ned W., to Hoover Universal, Inc. Box spring assembly with limited deflection formed wire springs. 4,238,861, Cl. 5-247.000.
Mizuno, Kenichi: *See—*
Nambu, Hirohiko; Mizuno, Kenichi; and Matumoto, Tetuhiro, 4,239,644, Cl. 252-186.000.
Mobil Oil Corporation: *See—*
Brennan, James A.; and Norris, Henry D., 4,239,927, Cl. 585-24.000.
Doll, Brian E.; Coty, Vernon F.; and Lifland, Philip P., 4,239,620, Cl. 210-601.000.
Myers, Donald W.; and Vivlamore, Samantha L., 4,239,727, Cl. 264-550.000.
Peiser, Alfred M.; Graham, Ronald I.; and McClernon, Joseph R., 4,239,618, Cl. 208-355.000.
Mobil Tyco Solar Energy Corporation: *See—*
Hatch, Arthur E.; and Yates, Douglas A., 4,239,583, Cl. 156-601.000.
Scharlack, Ronald S.; and Tornstrom, Eric, 4,239,555, Cl. 136-251.000.
Mock, Vernon A. Programmable perforator head. 4,238,982, Cl. 83-332.000.
Modisette, James E. Radiographic imaging system quality monitor. 4,239,395, Cl. 356-443.000.
Moliard, Henry. Locking device for visible record binders. 4,239,411, Cl. 402-77.000.
Monigold, Larry E.; and Cadwell, Ronald G., to Kysor Industrial Corporation. Multiple temperature actuated fluid-electric control device. 4,239,153, Cl. 236-86.000.
Mononen, Sakari, to Finncombi Sakari Mononen Ky. Apparatus for bulk-lopping, bucking and prestacking in forest harvesting. 4,239,067, Cl. 144-2.00Z.
Monroe, Gary S.; Contreras, Robert L.; and Hummel, Gregory C., to Monroe, Gary S.; Contreras, Robert L.; Hummel, Gregory C.; and Russell, Barry A. Method for converting hard top vehicles to removable top vehicles. 4,238,876, Cl. 29-401.100.
Monsanto Company: *See—*
D'Amico, John J.; and Schafer, David E., 4,239,527, Cl. 71-94.000.
Kowalski, Xavier, 4,239,643, Cl. 252-182.000.
Serlin, Irving, 4,239,858, Cl. 525-57.000.
Wilkinson, Walter J.; and Serlin, Irving, 4,239,676, Cl. 260-39.00P.
Montedison S.p.A.: *See—*
Campolmi, Stefano; Felicioli, Maria G.; Carletti, Vittorio; and Santi, Roberto, 4,239,914, Cl. 562-466.000.
Moore, Michael H., to Ciba-Geigy AG. Printing transparencies. 4,239,386, Cl. 355-77.000.
Moore, Michael R. P. Disposable storage container convertible to a bird-nesting box. 4,239,021, Cl. 119-23.000.
Moorman, David S., to Witco Chemical Company. Flame retardant latexes. 4,239,670, Cl. 260-29.6MP.
Morck, Charles W., Jr., to Selas Corporation of America. Double orifice vortex burner for low or high Wobbe fuels. 4,239,481, Cl. 431-284.000.
Mori, Kazuhiro: *See—*
Taki, Yasuo; Misawa, Yoshihiko; Araki, Shigeru; Mori, Kazuhiro; and Tanaka, Souhei, 4,239,576, Cl. 156-297.000.
Morioka, Isao. Stereophotographic process for producing works of sculpture. 4,239,359, Cl. 354-113.000.
Morishita, Hirosada: *See—*
Murakami, Kanji; Kawamoto, Mineo; Matsuda, Yoichi; Wajima, Motoyo; and Morishita, Hirosada, 4,239,813, Cl. 427-98.000.
Morishita, Mitsuharu; and Iwatani, Shiroh, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing semiconductor devices utilizing epitaxial deposition and tripie diffusion. 4,239,558, Cl. 148-175.000.
Morita, Hiroshi; and Washida, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrochromic display device. 4,239,350, Cl. 350-357.000.
Morival, Fernand. Method and apparatus for improving the efficiency of the deoxidation, desulfurization and purification of steel in the pouring ladle. 4,239,192, Cl. 266-216.000.
Morooka, Yasuo; Tanifuji, Shinya; and Matsuka, Shigemichi, to Hitachi, Ltd. Gauge control method and system for rolling mill. 4,240,147, Cl. 364-472.000.
Morozumi, Manami: *See—*
Kodama, Kenjiro; and Morozumi, Manami, 4,239,905, Cl. 536-29.000.

Morris, Robert S., to Gloucester Railway Carriage & Wagon Company Limited. Sidebearers. 4,239,302, Cl. 308-138.000.

Morrison, Charles F., Jr., to Vac-Tec Systems, Inc. Magnetron sputtering devices. 4,239,611, Cl. 204-298.000.

Morton, Bernard W., to Dri-Steem Humidifier Co., Inc. Electric steam humidifier. 4,239,956, Cl. 219-272.000.

Morville, Malcolm: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,239,779, Cl. 424-317.000.

Mosher, Paul R.: *See*—
Camp, Albert T.; Csanady, Elmer R.; and Mosher, Paul R., 4,239,561, Cl. 149-19.800.

Mosler Safe Company, The: *See*—
Parrock, Joseph J., Sr., 4,238,942, Cl. 70-299.000.

Motoori, Ryuzo: *See*—
Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, 4,239,358, Cl. 354-60.00E.

Motorola, Inc.: *See*—
Tosi, Kenneth F.; and McKee, John M., 4,240,002, Cl. 310-324.000.

Moyles, George L.: *See*—
Gates, William H., 4,239,158, Cl. 239-567.000.

MTS Systems Corporation: *See*—
Langer, William J., 4,238,954, Cl. 73-146.000.

Mueller, John J.; and Beall, Glenn L., to Containaire, Inc. Apparatus for facilitating inflow through closure threads of dispenser. 4,239,132, Cl. 222-212.000.

Muggee, Fred D.: *See*—
Chai, Bong J.; and Muggee, Fred D., 4,239,695, Cl. 260-502.500.

Mulder, Albertus J.; and Verbrugge, Pieter A., to Shell Oil Company. Novel 8-substituted bicyclo(3.2.)-octanes. 4,239,707, Cl. 570-130.000.

Muller, Hans; and Nilsson, Nils G. Two step ejector structure for a mold for injection molding or the like. 4,239,174, Cl. 249-67.000.

Muller, Rolf, to Papst-Motoren KG. Precision motor speed control system. 4,240,014, Cl. 318-328.000.

Multitronics Corporation: *See*—
Steuer, Robert R., 4,239,048, Cl. 128-666.000.

Munson, William O.: *See*—
Reed, Russell, Jr.; Munson, William O.; and Peterson, John A., 4,239,073, Cl. 149-19.910.

Murakami, Kanji; Kawamoto, Mineo; Matsuda, Yoichi; Wajima, Motoyo; and Morishita, Hirosada, to Hitachi, Ltd. Process for forming printed wiring by electroless deposition. 4,239,813, Cl. 427-98.000.

Muraki, Hideaki: *See*—
Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, 4,239,656, Cl. 252-462.000.

Muramoto, Yasukazu: *See*—
Ueno, Ryuzo; Tsuchiya, Hiroaki; Muramoto, Yasukazu; and Kuwae, Yoshihiko, 4,239,913, Cl. 562-425.000.

Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, to Tokyo Shibaura Electric Co., Ltd. Surface-treating agent adapted for intermediate products of a semiconductor device. 4,239,661, Cl. 252-541.000.

Murdock, Dwight, to Universal Dynamics, Inc. Removable orthodontic appliance. 4,239,487, Cl. 433-7.000.

Murphy, Alan P., to Procter & Gamble Company, The. Detergent compositions containing nonionic and cationic surfactants, the cationic surfactant having a long alkyl chain of from about 20 to about 30 carbon atoms. 4,239,659, Cl. 252-524.000.

Murphy, Peter; Dionne, Yvon O.; Kral, Jerry J.; and Stefaniszyn, John, to Northern Telecom Limited. Detection of faults in the insulation of an electrical conductor using a liquid electrolyte. 4,240,026, Cl. 324-54.000.

Mutschler, Otto. Fountain pen with improved ink flow control. 4,239,408, Cl. 401-217.000.

Mutton, John, to Rollform Pty. Ltd. Metal door frame assembly. 4,238,909, Cl. 49-504.000.

Myer, Jon H.; and Grinberg, Jan, to Hughes Aircraft Company. Parallel interconnect for planar arrays. 4,239,312, Cl. 339-17.00N.

Myers, Donald W.; and Vivlamore, Samantha L., to Mobil Oil Corporation. Method and apparatus for thermoforming thermoplastic foam articles. 4,239,727, Cl. 264-550.000.

Myers, William C., to Semicon, Inc. Semiconductor high-voltage switch. 4,240,088, Cl. 357-19.000.

Mynhier, Charles R., to Berryhill, Bill B. Pipe connector apparatus. 4,239,266, Cl. 285-323.000.

N T N Toyo Bearing Co. Ltd.: *See*—
Kimata, Kei; Nakazeki, Tsugito; and Yasuda, Yoshinobu, 4,239,028, Cl. 123-389.000.

Naab, Jakob, to Zoller-Kipper GmbH. Heavy duty receptacle unloading device for trucks. 4,239,437, Cl. 414-408.000.

Nabeshima, Shigeyasu: *See*—
Hirohara, Hideo; Nabeshima, Shigeyasu; and Nagase, Tsuneyuki, 4,239,854, Cl. 521-31.000.

Nagai, Koji: *See*—
Tanaka, Susumu; Nagai, Koji; and Inagaki, Sanzi, 4,239,845, Cl. 430-122.000.

Nagase, Hiroshi: *See*—
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,240,020, Cl. 318-721.000.

Nagase, Minoru, to Nippon Air Brake Co., Ltd, The. Brake gear for vehicles. 4,239,292, Cl. 303-3.000.

Nagase, Tsuneyuki: *See*—
Hirohara, Hideo; Nabeshima, Shigeyasu; and Nagase, Tsuneyuki, 4,239,854, Cl. 521-31.000.

Nagata, Kenichi: *See*—
Nakabayashi, Yasuyuki; Nagata, Kenichi; and Fukuda, Shozo, 4,239,426, Cl. 406-197.000.

Nagel, Klaus, to Herberts Gesellschaft mit beschrankter Haftung. Method of producing electrically insulating, highly flexible and/or solderable coatings. 4,239,814, Cl. 427-120.000.

Nakabayashi, Yasuyuki; Nagata, Kenichi; and Fukuda, Shozo, to Mitsubishi Jukogyo Kabushiki Kaisha; Electric Power Development Co. Ltd.; and Misui Engineering & Shipbuilding Co. Ltd. Method of transporting and storing mixed fuel and plant therefor. 4,239,426, Cl. 406-197.000.

Nakagawa, Hiroaki: *See*—
Hashimoto, Isao; Nakagawa, Hiroaki; Taguchi, Toru; and Nambu, Hirohiko, 4,239,921, Cl. 568-753.000.

Nakagawa, Sumio: *See*—
Tanaka, Toshio; and Nakagawa, Sumio, 4,239,478, Cl. 431-24.000.

Nakagawa, Tatsuya, to Excell Corporation. Apparatus for molding a plastic pipe. 4,239,474, Cl. 425-525.000.

Nakahara, Yutaka: *See*—
Ohzeki, Toshio; Akutsu, Mitsuo; Nakahara, Yutaka; Haruna, Tohru; Minagawa, Motonobu; and Nonoyama, Masahiro, 4,239,803, Cl. 428-379.000.

Nakamura, Akira: *See*—
Uchiyama, Hiromichi; Yaguchi, Eiichi; Nakamura, Akira; Maeda, Yoshio; and Watabe, Susumu, 4,239,094, Cl. 191-25.000.

Nakamura, Takao: *See*—
Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, 4,239,865, Cl. 525-327.000.

Nakamura, Yasuo: *See*—
Kurokawa, Hiromichi; Nakamura, Yasuo; Gando, Masayoshi; Okada, Haruhiko; Yamazaki, Masaru; and Yamanaka, Hideo, 4,240,006, Cl. 313-386.000.

Nakaoka, Mitsuo, to Silver Seiko, Ltd. Fabric manipulating device for manipulating the loops of a knitted fabric. 4,238,937, Cl. 66-60.00H.

Nakazawa, Hiroshi; and Baba, Yasuharu, to Sony Corporation. Switching regulator. 4,240,134, Cl. 363-21.000.

Nakazeki, Tsugito: *See*—
Kimata, Kei; Nakazeki, Tsugito; and Yasuda, Yoshinobu, 4,239,028, Cl. 123-389.000.

Nambu, Hirohiko; Mizuno, Kenichi; and Matumoto, Tetuhiro, to Mitsui Petrochemical Industries Ltd. Liquid peroxide composition. 4,239,644, Cl. 252-186.000.

Nambu, Hirohiko: *See*—
Hashimoto, Isao; Nakagawa, Hiroaki; Taguchi, Toru; and Nambu, Hirohiko, 4,239,921, Cl. 568-753.000.

Narasimhan, Mandayam C.: *See*—
Boggs, Beryl A.; Narasimhan, Mandayam C.; and Li, Hsin L., 4,239,187, Cl. 242-25.00R.

Naruse, Tunehide, to Victor Company of Japan, Limited. Magnetic material for recording media. 4,239,637, Cl. 252-62.540.

National Semiconductor Corporation: *See*—
Mihalich, Stephen K., 4,240,039, Cl. 330-253.000.

National Starch and Chemical Corp.: *See*—
Gaspar, Lawrence A.; Tessler, Martin; and Malcolm, Alexander R., 4,239,592, Cl. 162-175.000.

National Steel Corporation: *See*—
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Naylor, Arthur G.: *See*—
Johnson, Everett C.; and Naylor, Arthur G., 4,240,032, Cl. 324-158.00F.

Naylor, Floyd E.: *See*—
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NCR Corporation: *See*—
DevChoudhury, Rathindra N., 4,240,064, Cl. 340-146.3AG.

Neathery, William D.: *See*—
Broekhuizen, Willem; Gaffey, Troy M.; Joglekar, Mukund M.; and Neathery, William D., 4,239,455, Cl. 416-145.000.
Joglekar, Mukund M.; Gaffey, Troy M.; Broekhuizen, Willem; and Neathery, William D., 4,239,456, Cl. 416-145.000.

Neefe, Charles W., to Neefe Optical Laboratory. Method of making bifocal contact lenses. 4,239,712, Cl. 264-1.000.

Neefe Optical Laboratory: *See*—
Neefe, Charles W., 4,239,712, Cl. 264-1.000.

Negrao, Paulo M. Muffler. 4,239,091, Cl. 181-243.000.

Nelan, Donald R.; and Foster, Charles H., to Eastman Kodak Company. Conversion of non-alpha-tocopherols to alpha-tocopherols. 4,239,691, Cl. 260-345.500.

Nelson, Frederick W., to Minnesota Mining and Manufacturing Company. Stethoscope chestpiece. 4,239,089, Cl. 181-131.000.

Nelson, Hugh A.; Wafer, John A.; Koren, Paul P.; Salemi, Nicholas A.; and Maier, Alfred E., to Westinghouse Electric Corp. Circuit breaker utilizing improved current carrying conductor system. 4,240,053, Cl. 335-16.000.

Neroni, Peter J.: *See*—
Kleykamp, Donald L.; and Neroni, Peter J., 4,239,007, Cl. 105-225.000.

Neuner, James A.: *See*—
Oates, Robert M.; Neuner, James A.; Couch, Robert D., Jr.; and Kasinoff, Alan M., 4,239,595, Cl. 176-19.00R.

Niagara Bottle Washer Manufacturing Co.: *See*—
Vamvakas, Michael, 4,239,626, Cl. 210-333.010.

Nichols, Donald K.: *See*—
August, Rudolf R.; Strahan, Virgil H.; James, Kenneth A.; and Nichols, Donald K., 4,239,963, Cl. 250-231.00R.

Nickel, Horst: *See—*
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Nieden, Achim zur: *See—*
Streicher, Kurt; and Nieden, Achim zur, 4,239,026, Cl. 123-196.00R.
Niedermeyer, William P. Solar energy collector. 4,239,034, Cl. 126-439.000.
Nielsen, Don B.; and Nielsen, Knut J. Storage box for substantially parallelepipedic tape and film cases. 4,239,109, Cl. 206-387.000.
Nielsen, Jorgen F.: *See—*
Aegidius, Poul E.; Zakora, Miloslav; and Nielsen, Jorgen F., 4,239,394, Cl. 356-436.000.
Nielsen, Knut J.: *See—*
Nielsen, Don B.; and Nielsen, Knut J., 4,239,109, Cl. 206-387.000.
Niemi, Antti J.; and Jutila, Pentti K., to Jutila, Pentti, a part interest. Method and apparatus for controlling the pH. 4,239,493, Cl. 23-230.00A.
Nikodem, Robert B.: *See—*
Lampkin, Curtis M.; Roderick, Guy A.; and Nikodem, Robert B., 4,239,809, Cl. 427-74.000.
Nilsson, Nils G.: *See—*
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Nippon Air Brake Co., Ltd, The: *See—*
Nagase, Minoru, 4,239,292, Cl. 303-3.000.
Nippon Electric Co., Ltd.: *See—*
Aoyama, Tsutomu, 4,239,331, Cl. 350-96.200.
Inaba, Masao; Sugimoto, Atsumi; and Miyahara, Shigeru, 4,240,112, Cl. 358-160.000.
Sakoe, Hiroaki, 4,239,936, Cl. 179-1.0SD.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Hardboard Co. Ltd.: *See—*
Ishida, Nobumasa; Yamada, Yasuo; and Jinno, Hideki, 4,239,716, Cl. 264-86.000.
Nippon Hoso Kyokai: *See—*
Taketoshi, Kazuhisa, 4,239,534, Cl. 75-134.00T.
Nippon Kogaku K.K.: *See—*
Daitoku, Koichi, 4,239,166, Cl. 242-71.600.
Iida, Yozo, 4,239,357, Cl. 354-25.000.
Katayama, Akira; and Hozumi, Toshiaki, 4,239,362, Cl. 354-212.000.
Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, 4,239,358, Cl. 354-60.00E.
Nippon Steel Corporation: *See—*
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Nippon Telegraph and Telephone Public Corporation: *See—*
Matsumoto, Takao, 4,239,329, Cl. 350-96.150.
Nishimura, Tatsuo: *See—*
Numata, Mitsuo; Yamaoka, Masayoshi; Minamida, Isao; Shiraishi, Mitsuru; and Nishimura, Tatsuo, 4,239,758, Cl. 424-246.000.
Nishio, Taketaro: *See—*
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Nissan Motor Company, Limited: *See—*
Fujioka, Kazuyoshi, 4,238,929, Cl. 60-336.000.
Kanegae, Hidetoshi, 4,238,924, Cl. 60-39.28R.
Oda, Takaaki, 4,239,277, Cl. 296-37.120.
Uchiyama, Hiromichi; Yaguchi, Eiichi; Nakamura, Akira; Maeda, Yoshio; and Watabe, Susumu, 4,239,094, Cl. 191-25.000.
Yano, Tsuneomi; and Yuzawa, Haruo, 4,240,145, Cl. 364-431.000.
Nissen, Axel; Heiien, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, to BASF Aktiengesellschaft. Manufacture of carbonyl compounds. 4,239,657, Cl. 252-464.000.
Nitzberg, Leonard R. Process for the manufacture of patterned urea thermoplastic molding compound preforms to be used for the production of consistently patterned buttons with molded holes. 4,239,721, Cl. 264-157.000.
Nixdorf, Donald H.: *See—*
Henley, Virgil E.; Hineborg, James R.; and Nixdorf, Donald H., 4,239,565, Cl. 156-126.000.
Noguchi, Kazuo: *See—*
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Noguchi, Kohji: *See—*
Miyake, Tetsuya; Noguchi, Kohji; and Imamura, Kazuo, 4,239,892, Cl. 546-251.000.
Nolan, Evelyn L., executrix: *See—*
Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased, 4,239,823, Cl. 427-420.000.
Nolan, James P., deceased: *See—*
Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased, 4,239,823, Cl. 427-420.000.
Nolan Systems Inc.: *See—*
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Nonoyama, Masahiro: *See—*
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Nordstrom, Larry A.: *See—*
DeFilipps, Fred A.; Lipper, Roy O.; Winters, Luther R., Jr.; Nordstrom, Larry A.; and Szechy, Daniel J., 4,239,404, Cl. 400-613.000.
Norman, Benjamin F. J.; and Brown, Clifford R. Golf swing training device. 4,239,228, Cl. 273-189.00R.
Norris, Henry D.: *See—*
Brennan, James A.; and Norris, Henry D., 4,239,927, Cl. 585-24.000.
Norris, Philip R., to Polaroid Corporation. Accessory for adapting cameras to small format photographic film units. 4,239,365, Cl. 354-295.000.
North American Philips Corporation: *See—*
Haas, David J.; Galetta, Nick; and Juner, Adolf, 4,239,969, Cl. 250-359.000.
Northern Telecom Limited: *See—*
Murphy, Peter; Dionne, Yvon O.; Kral, Jerry J.; and Stefaniszyn, John, 4,240,026, Cl. 324-54.000.
Northrop Corporation: *See—*
Rothe, Dietmar E., 4,240,043, Cl. 331-94.5PE.
Norton Company: *See—*
Harris, Denis I.; and Staples, Luke, 4,239,503, Cl. 51-298.000.
Norton, Lyle K.; Prichard, Robert J.; and Ochi, Margit K., to EOCOM Corporation. Computerized laser engraving system and method. 4,240,119, Cl. 358-297.000.
Notaro, Frank, to Union Carbide Corporation. Flame-sprayed thermoplastic substrate is coated with an adhesive layer which bonds particles of an adsorbent like carbon to the substrate. 4,239,827, Cl. 428-35.000.
Novello, Dante; and Mengotti, Alessandro, to Mil S.p.A. Device for painting, spraying, enamelling or tinting of manufactured articles in general. 4,239,015, Cl. 418-321.000.
Nowak, Heinz: *See—*
Aust, Heinrich; Budich, Wolfgang; Nowak, Heinz; and Primessing, Franz, 4,239,574, Cl. 156-267.000.
Nuclear Supreme: *See—*
Waltrip, Owen R., 4,239,161, Cl. 241-46.020.
Nudenberg, Walter: *See—*
Beretta, David; Loveless, Frederick C.; and Nudenberg, Walter, 4,239,638, Cl. 252-73.000.
Matthews, Demetreos N.; Nudenberg, Walter; and Petersen, Henno A., 4,239,862, Cl. 525-240.000.
Numata, Mitsuo; Yamaoka, Masayoshi; Minamida, Isao; Shiraishi, Mitsuru; and Nishimura, Tatsuo, to Takeda Chemical Industries, Ltd. Cephalosporins. 4,239,758, Cl. 424-246.000.
Numata, Saburo, to Fuji Photo Optical Co., Ltd. Automatic electronic flash light device. 4,240,008, Cl. 315-151.000.
Nusslein, Ludwig; Arndt, Friedrich; and Rusch, Reinhart, to Schering Aktiengesellschaft. Thiadiazolyl ureas with herbicidal effect. 4,239,524, Cl. 71-90.000.
Nyc, Janusz: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.
Nyland, Roger L.: *See—*
Hogan, Stephen J.; and Nyland, Roger L., 4,238,930, Cl. 62-138.000.
Nyquist, Stephen E.: *See—*
Huetsch, Larry C.; Swanson, James P.; and Nyquist, Stephen E., 4,239,252, Cl. 280-446.00R.
Nyul, Paul: *See—*
Hughes, Frederick R.; and Nyul, Paul, 4,240,090, Cl. 357-30.000.
Oates, Robert M.; Neuner, James A.; Couch, Robert D., Jr.; and Kasinoff, Alan M., to Westinghouse Electric Corp. Data system for automatic flux mapping applications. 4,239,595, Cl. 176-19.00R.
Obara, Isao; Kamada, Atsuya; and Kaneda, Aizo, to Hitachi, Ltd. Spider of loudspeaker. 4,239,944, Cl. 179-115.5VC.
Oberbeck, Donald E.: *See—*
Frank, Matthew W.; and Oberbeck, Donald E., 4,238,873, Cl. 126-443.000.
Occidental Oil Shale, Inc.: *See—*
French, Gordon B., 4,239,285, Cl. 299-2.000.
Ridley, Richard D., 4,239,283, Cl. 299-2.000.
Ridley, Richard D.; and Fernandes, Robert J., 4,239,284, Cl. 299-2.000.
Occidental Petroleum Corporation: *See—*
Choi, Charles K., 4,239,599, Cl. 201-2.500.
Ochi, Margit K.: *See—*
Norton, Lyle K.; Prichard, Robert J.; and Ochi, Margit K., 4,240,119, Cl. 358-297.000.
Ochiai, Takeshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Digital circuit for conditioning the operation of a motor vehicle upon the tested motor ability of the operator. 4,240,071, Cl. 340-576.000.
Oda, Takaaki, to Nissan Motor Company, Limited. Lid mountings for automobile interior storage cabinets. 4,239,277, Cl. 296-37.120.
Odagiri, Masaru: *See—*
Iijima, Yasuo; Shinohara, Koichi; Fujita, Takashi; Odagiri, Masaru; and Kunieda, Toshiaki, 4,239,835, Cl. 428-611.000.
Oehler, Kenneth L. Sunshield and light diffuser. 4,239,962, Cl. 250-222.00R.
Oesterlin, Rudolf: *See—*
Bell, Malcolm R.; and Oesterlin, Rudolf, 4,239,687, Cl. 260-326.270.
Ofstead, Eilert A.; and Senyek, Michael L., to Goodyear Tire & Rubber Company, The. Cyclopentene copolymerization process. 4,239,874, Cl. 526-143.000.
Ogano, Takeo: *See—*
Saruhashi, Kazuo; and Ogano, Takeo, 4,238,918, Cl. 56-202.000.

Ogasawara, Toyotsugu, to Tomy Kogyo Co., Ltd. Device for driving a simulated flying object. 4,239,207, Cl. 272-31.00A.
Ogata, Yasuhiro: *See*—
Kato, Hajime; and Ogata, Yasuhiro, 4,239,815, Cl. 427-150.000.
Ogino, Shuji, to Minolta Camera Kabushiki Kaisha. Conversion lens system. 4,239,340, Cl. 350-214.000.
Ogorek, Kurt: *See*—
Goris, Heinrich; Gunther, Roland; Ogorek, Kurt; and Schwarting, Karl-Heinz, 4,239,290, Cl. 299-34.000.
Ohashi, Taizo: *See*—
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,239,661, Cl. 252-541.000.
Ohhinata, Ichiro, to Hitachi, Ltd. Trigger circuit for a thyristor. 4,239,985, Cl. 307-252.00G.
Ohishi, Shigeo: *See*—
Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, 4,239,865, Cl. 525-327.000.
Ohkawa, Tihiro, to United States of America, Energy. Control of impurities in toroidal plasma devices. 4,239,594, Cl. 176-9.000.
Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, to Nippon Kogaku K.K. Alarm device control system in a camera. 4,239,358, Cl. 354-60.00E.
Ohzeki, Toshio; Akutsu, Mitsuo; Nakahara, Yutaka; Haruna, Tohru; Minagawa, Motonobu; and Nonoyama, Masahiro, to Argus Chemical Corporation. Ethylene polymer composition. 4,239,803, Cl. 428-379.000.
Okada, Haruhiko: *See*—
Kurokawa, Hiromichi; Nakamura, Yasuo; Gando, Masayoshi; Okada, Haruhiko; Yamazaki, Masaru; and Yamanaka, Hideo, 4,240,006, Cl. 313-386.000.
Okada, Takehiro: *See*—
Kimura, Tsuneo; Kohyama, Katsuhisa; Okada, Takehiro; and Sakata, Katsuyuki, 4,239,882, Cl. 528-209.000.
Okumura, Osamu; Sakatani, Takenobu; Kashiwada, Toshinobu; and Tokuyama, Kiyotaka, to Lion Fat and Oil Co., Ltd., The. Liquid detergent compositions. 4,239,662, Cl. 252-555.000.
Okuno, Osamu: *See*—
Misumi, Teruyuki; Tanaka, Kyogo; and Okuno, Osamu, 4,239,686, Cl. 260-325.0PH.
Okuyama, Muneaki. Two-staged pressure cooker. 4,238,996, Cl. 99-352.000.
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, to Hitachi, Ltd. Control system for suppressing torque ripple in synchronous motor. 4,240,020, Cl. 318-721.000.
Olin Corporation: *See*—
Johnson, Peter W., 4,239,143, Cl. 227-10.000.
Oliver, Donald W.; and Culver, Richard B., to Dresser Industries, Inc. Method and apparatus for neutron induced gamma ray logging for direct porosity identification. 4,239,965, Cl. 250-270.000.
Olschewski, Armin: *See*—
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,239,298, Cl. 308-6.00C.
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.
Olsen, Olav: *See*—
Slatten, Arvid; Bech, Harald; and Olsen, Olav, 4,239,417, Cl. 405-195.000.
Olson, Daniel R.: *See*—
Schroeter, Siegfried H.; and Olson, Daniel R., 4,239,798, Cl. 428-331.000.
Olson, Paul E., to American Standard Inc. Overload protection control circuit for marine engines. 4,239,454, Cl. 416-27.000.
Olstad, James H. Apparatus for supporting a door during processing. 4,239,197, Cl. 269-68.000.
Oltman, John P.; and Purkapile, Emerson V., to Waterloo Industries, Inc. Workbench. 4,239,195, Cl. 269-16.000.
Olympus Optical Co., Ltd.: *See*—
Kondo, Isao, 4,239,984, Cl. 307-237.000.
Sato, Yuichi, 4,239,363, Cl. 354-238.000.
Satoh, Ken; and Furuta, Kenzi, 4,239,957, Cl. 235-92.0DN.
Omholt, Ray E. Resiliently cushioned adhesive-applied rebound wall surfacing system and method of construction. 4,238,914, Cl. 52-309.300.
O'Neal, Larry. Mounting for inflatable dock seal. 4,238,910, Cl. 52-2.000.
Ong, Lincoln T. Medical electrode. 4,239,046, Cl. 128-640.000.
Oosterling, Pieter A.; and Van Staveren, Hendricus C., to Vicon N.V. Mowing device. 4,238,917, Cl. 56-192.000.
Oppenlaender, Knut: *See*—
Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, 4,239,491, Cl. 8-532.000.
Optische Werke Kreuznach: *See*—
Wagner, Werner, 4,239,339, Cl. 350-184.000.
Orth, Dieter: *See*—
Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; Orth, Dieter; Wild, Albrecht; and Simane, Zdenek, 4,239,759, Cl. 424-248.400.
Ortho Pharmaceutical Corporation: *See*—
Kane, Vinayak V., 4,239,689, Cl. 260-333.000.
Osrow, Leonard, to Osrow Products Co., Inc. Brush assembly with pulsating water jet discharge. 4,239,409, Cl. 401-281.000.
Osrow Products Co., Inc.: *See*—
Osrow, Leonard, 4,239,409, Cl. 401-281.000.
Otsuka Chemical Co., Ltd.: *See*—
Kinoshita, Tsukuru; Masuda, Shuji; and Hasegawa, Tetuo, 4,239,542, Cl. 106-18.140.
Otsuka Pharmaceutical Co., Ltd.: *See*—
Sato, Tadao, 4,239,709, Cl. 260-974.000.
Ottersbach, Thomas V.: *See*—
Hildebrandt, Eugene F.; Ottersbach, Thomas V.; and DeVries, Wayne J., 4,240,001, Cl. 310-68.00E.
Ottofrickenstein, Hans: *See*—
Fink, Herbert; Huebner, Klaus; Dinklage, Horst; and Ottofrickenstein, Hans, 4,239,671, Cl. 260-29.6TA.
Oudet, Jean-Marie P.: *See*—
Oudet, Paul-Marie B.; and Oudet, Jean-Marie P., 4,238,935, Cl. 63-2.000.
Oudet, Paul-Marie B.; and Oudet, Jean-Marie P. Method for manufacturing a chain from the vertebra of an animal. 4,238,935, Cl. 63-2.000.
Owens, Walter K. Gravity assisted newspaper vending machine with customer-operated newspaper lift device. 4,239,127, Cl. 221-259.000.
Oy Kaukas AB: *See*—
Era, Vaino; and Lindberg, J. Johan, 4,239,667, Cl. 260-18.0TN.
Oyama, Shigeaki: *See*—
Harano, Keiichi; and Oyama, Shigeaki, 4,240,000, Cl. 310-54.000.
Ozawa, Fumihiro, to Seiko Seiki Kabushiki Kaisha. Positioning apparatus for transferring pallets. 4,239,445, Cl. 414-749.000.
Packett, Marvin A.: *See*—
Gonas, Albert J.; Packett, Marvin A.; and Street, Donald A., 4,239,279, Cl. 296-210.000.
Padwa, Murray N. Cassette-to-cassette duplicator. 4,240,120, Cl. 360-15.000.
Paetsch, Juergen: *See*—
Perner, Johannes; Stoeckigt, Dieter; Diessel, Paul; Merger, Franz; and Paetsch, Juergen, 4,239,552, Cl. 134-28.000.
Perner, Johannes; Diessel, Paul; Stoeckigt, Dieter; Merger, Franz; and Paetsch, Juergen, 4,239,641, Cl. 252-142.000.
Page, Dan: *See*—
Griggs, William L., III; Serrano, Ernest E.; Page, Dan; and Reul, Charles G., 4,239,047, Cl. 128-663.000.
Page, Michael G.: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,239,779, Cl. 424-317.000.
Page, Wilbur M., to Clayton Dewandre Company Limited. Vehicle braking system with valving to control spring applied brakes and fluid actuated service brake units. 4,239,293, Cl. 303-6.00M.
Palmer, E. Frederick. Random number generator. 4,239,226, Cl. 273-146.000.
Palubiak, Charles: *See*—
Graham, Howard A.; and Palubiak, Charles, 4,238,947, Cl. 72-237.000.
Panchak, John R.: *See*—
DePaul, Harry V.; and Panchak, John R., 4,239,642, Cl. 252-182.000.
Pankavich, John A.: *See*—
Asato, Goro; and Pankavich, John A., 4,239,708, Cl. 260-926.000.
Pannwitz, Hans U. Flexible spring bearing. 4,239,301, Cl. 308-35.000.
Panseri, Mario: *See*—
Giani, Adolfo; Panseri, Mario; and Mascioni, Umberto, 4,238,999, Cl. 101-116.000.
Pantelis, Philippos, to Post Office. Method fpr producing piezoelectric polymeric material. 4,239,608, Cl. 204-159.170.
Panunzio, Sergio R.: *See*—
Polo, Vincent; and Panunzio, Sergio R., 4,238,973, Cl. 74-501.00R.
Papenmeier France Sarl: *See*—
Fulhaber, H. Lucien, 4,239,473, Cl. 425-392.000.
Papst-Motoren KG: *See*—
Muller, Rolf, 4,240,014, Cl. 318-328.000.
Paquet, Paul. Firearm training device. 4,239,233, Cl. 273-383.000.
Parenti, Francesco: *See*—
Coronelli, Carolina; Beretta, Grazia; Bardone, Maria R.; and Parenti, Francesco, 4,239,751, Cl. 424-118.000.
Parfree, Colin S.; and Worthington, Peter, to International Standard Electric Corporation. Optical communication cable. 4,239,336, Cl. 350-96.230.
Parg, Adolf; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. O-Substituted N-hydroxysulfamid acid halides and their preparation. 4,239,697, Cl. 260-543.00R.
Parham, Roger R.; and Adler, Glenn D. Target life extender. 4,239,236, Cl. 273-403.000.
Pariani, Ronald L.: *See*—
Berry, Milton E.; and Pariani, Ronald L., 4,239,191, Cl. 266-200.000.
Parr, William W. Swivel connector. 4,239,313, Cl. 339-89.00C.
Parrish, Charles A., to Sperry Corporation. Automatic bale ejection drive override means. 4,238,919, Cl. 56-341.000.
Parrock, Joseph J., Sr., to Mosler Safe Company, The. Direct dial combination lock with driver-cammed reciprocating tumblers and scrambled combs. 4,238,942, Cl. 70-299.000.
Parushev, Stoyan P.: *See*—
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Hinova, Maya H.; and Parushev, Stoyan P., 4,239,605, Cl. 204-59.00R.
Patrushev, Gennady V.: *See*—
Rogov, Viktor F.; Lipatov, Nikolai K.; Patrushev, Gennady V.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,239,112, Cl. 206-525.000.

Patrylak, Andrew J.: *See—*
Elton, Edward F.; Patrylak, Andrew J.; and Santangelo, Joseph G., 4,239,589, Cl. 162-31.000.

Pattenden, Thomas W. E., to Du Pont Canada, Inc. Protected lumber. 4,239,831, Cl. 428-193.000.

Paul, Egbert; and Reither, Karl. Separation of particles from gaseous fluid flows. 4,239,513, Cl. 55-118.000.

Paul, Jon D. Electronic ballast. 4,240,009, Cl. 315-224.000.

Paul, Steven M.; and Skolnick, Phil, to United States of America, America. Radioreceptor assay for benzodiazepines in plasma and other biological specimens. 4,239,744, Cl. 424-1.000.

Paul, Volker: *See—*
Sasse, Klaus; Gauss, Walter; Frohberger, Paul-Ernst; Kraus, Peter; and Paul, Volker, 4,239,760, Cl. 424-249.000.

Pavlinch, George R. Inflatable catheter for a male urinal. 4,239,044, Cl. 128-295.000.

Pavolka, John D., to Pullman Incorporated. Method and apparatus for distribution of granular material in a railway hopper car. 4,239,424, Cl. 406-157.000.

Pawlowski, Thomas D., to American Can Company. Cup dispensing apparatus. 4,239,125, Cl. 221-65.000.

Pearce, James C., to Chevron Research Company. Arctic multi-angle conical structure having a discontinuous outer surface. 4,239,418, Cl. 405-211.000.

Pearsall Chemical Company: *See—*
Allphin, N. Lee; Valentine, Fred S.; and Grams, Gary W., 4,239,930, Cl. 585-517.000.

Peiser, Alfred M.; Graham, Ronald I.; and McClernon, Joseph R., to Mobil Oil Corporation. Twin tower distillation of crude oil. 4,239,618, Cl. 208-355.000.

Pen Kem, Inc.: *See—*
Goetz, Philip J., 4,239,612, Cl. 204-299.00R.

Pendax Interior AB: *See—*
Planebo, Sten, 4,239,170, Cl. 248-441.00B.

Penebre, Nicholas A.: *See—*
Dreyfus, Russell W.; Penebre, Nicholas A.; and McCorkle, Richard A., 4,240,007, Cl. 315-111.800.

Penicillin Assays, Inc.: *See—*
Charm, Stanley E., 4,239,745, Cl. 424-1.000.
Charm, Stanley E., 4,239,852, Cl. 435-32.000.

Pennwalt Corporation: *See—*
Cushman, Robert H., 4,239,971, Cl. 250-439.00P.

Perkins, Derrick O., to Telex Computer Products, Inc. Frequency tracking adjustable duty cycle ratio pulse generator. 4,239,992, Cl. 307-265.000.

Perkins, James F.: *See—*
Cason, Charles M., III; Perkins, James F.; and Jones, Robert W., 4,239,341, Cl. 350-294.000.

Perna, Jiulio E.: *See—*
Hesse, David L.; Krolak, Ronald F.; and Perna, Jiulio E., 4,239,320, Cl. 339-154.00A.

Perner, Johannes; Stoeckigt, Dieter; Diessel, Paul; Merger, Franz; and Paetsch, Juergen, to BASF Aktiengesellschaft. Machine dishwashing, using polyhydric alcohols, carboxylic acids and or esters of these as rinsing agents. 4,239,552, Cl. 134-28.000.

Perner, Johannes; Diessel, Paul; Stoeckigt, Dieter; Merger, Franz; and Paetsch, Juergen, to BASF Aktiengesellschaft. Use of polyhydric alcohols, carboxylic acids, hydroxy-carboxylic acids and/or their esters with polyhydric alcohols as viscosity regulators. 4,239,641, Cl. 252-142.000.

Perry, George W. Ashtray. 4,239,049, Cl. 131-235.0ST.

Persson, Bertil: *See—*
Ingemann, Bertil; and Persson, Bertil, 4,238,865, Cl. 12-114.800.

Peters, Clifford M., to ACF Industries, Incorporated. Pull type relay valve with automatic lockout. 4,239,058, Cl. 137-557.000.

Petersen, Harro: *See—*
Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, 4,239,491, Cl. 8-532.000.

Petersen, Henno A.: *See—*
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Peterson, Harley G., to Joy Manufacturing Company. Damper valve. 4,239,061, Cl. 137-614.110.

Peterson, John A., to Minnesota Mining and Manufacturing Company. Illumination means for electrographic reproduction. 4,239,383, Cl. 355-67.000.

Peterson, John A.: *See—*
Reed, Russell, Jr.; Munson, William O.; and Peterson, John A., 4,239,073, Cl. 149-19.910.

Petrolite Corporation: *See—*
Russell, Stephen E.; Story, Phillip M.; and Letcher, C. S., 4,239,546, Cl. 106-270.000.

Petrow, Vladimir: *See—*
Grunwell, Joyce F.; and Petrow, Vladimir, 4,239,681, Cl. 260-239.55R.

Pfahler, Gerhard: *See—*
Wiezer, Hartmut; Pfahler, Gerhard; and Mayer, Norbert, 4,239,891, Cl. 546-242.000.

Pfefferle, William C., to Engelhard Minerals and Chemicals Corporation. Production of a fuel gas and synthetic natural gas from methanol. 4,239,499, Cl. 48-197.00R.

Pfeiffer, Heinrich; and Speck, Ulrich, to Schering Aktiengesellschaft. Dicarboxylic acid bis(3,5-dicarbamoyl-2,4,6-triiodoanilides) useful as x-ray contrast agents. 4,239,747, Cl. 424-5.000.

Pfizer Inc.: *See—*
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,239,779, Cl. 424-317.000.
Miller, Max W., 4,239,888, Cl. 544-309.000.

Phillips Petroleum Company: *See—*
Campbell, Grover R.; and Hobbs, James W., 4,239,517, Cl. 62-37.000.
Hays, George E.; and Cook, Charles F., 4,239,510, Cl. 55-68.000.
Hsieh, Henry L.; and Naylor, Floyd E., 4,239,806, Cl. 428-462.000.
Sauber, Charles A., 4,239,629, Cl. 252-8.50C.
Smith, Richard L., 4,239,870, Cl. 526-59.000.
Vinatieri, James E., 4,239,628, Cl. 252-8.55D.
Wilson, Joseph F.; Fodor, Lawrence M.; and Kenton, Joseph R., 4,239,522, Cl. 71-29.000.

Photon Power, Inc.: *See—*
Lampkin, Curtis M.; Roderick, Guy A.; and Nikodem, Robert B., 4,239,809, Cl. 427-74.000.

Pianta, Mery. Stationery booklet. 4,239,410, Cl. 402-20.000.

Picciolo, William A., to Douglas Battery Manufacturing Co. System for protecting and sealing intercell connecting links and poles of industrial batteries. 4,239,836, Cl. 429-65.000.

Picker Corporation: *See—*
Taenzer, Jon C., 4,238,962, Cl. 73-633.000.

Pickles, Joseph, to Ferro Manufacturing Corporation. Three-position actuator. 4,238,991, Cl. 92-85.00A.

Pigasse, Daniel, to Produits Chimiques Ugine Kuhlmann. Process for the preparation of phthalocyanine pigments. 4,239,685, Cl. 260-314.500.

Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Fillain, Paul de C., to Labaz. Dihydropyridine derivatives. 4,239,893, Cl. 546-321.000.

Pikorz, Wolfgang: *See—*
Brandt, Jurgen; Herold, Ludwig; Pikorz, Wolfgang; and Sonntag, Alois, 4,240,099, Cl. 357-79.000.

Pinck, Peter: *See—*
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Pirelli Furlanis Applicazioni Indrauliche: *See—*
Borca, Bruno; and Ruscelli, Emilio, 4,239,416, Cl. 405-53.000.

Pitney Bowes Inc.: *See—*
Check, Frank T.; and Schubert, Keith E., 4,239,088, Cl. 177-210.0FP.

PKL Papier- und Kunststoff Werke: *See—*
Schadowski, Werner; and Bellut, Heinrich, 4,239,150, Cl. 229-48.00R.

Planebo, Sten, to Pendax Interior AB. Means for supporting a writing board or the like. 4,239,170, Cl. 248-441.00B.

Plastics, Inc.: *See—*
Cunningham, Emmett M., 4,239,009, Cl. 108-20.000.

Platz, Rolf: *See—*
Weitz, Hans-Martin; Platz, Rolf; and Hartig, Juergen, 4,239,910, Cl. 560-244.000.

Plempel, Manfred: *See—*
Buchel, Karl H.; Kramer, Wolfgang; and Plempel, Manfred, 4,239,767, Cl. 424-273.00R.
Regel, Erik; Buchel, Karl; Haller, Ingo; and Plempel, Manfred, 4,239,765, Cl. 424-269.000.

Plessey Handel und Investments AG: *See—*
Ilies, Christopher W., 4,240,146, Cl. 364-467.000.

Plessey Peripheral Systems: *See—*
Veale, John R., 4,239,401, Cl. 400-144.200.

Plurien, Pierre: *See—*
Benoit, Robert; Machefer, Jacques; Mauvisseau, Jacques; and Plurien, Pierre, 4,239,507, Cl. 55-16.000.

Plyler, Robert G.: *See—*
Gladd, Joseph H.; Horrell, Theodore H., Jr.; and Plyler, Robert G., 4,239,319, Cl. 339-147.00R.

Poclain: *See—*
Dodemont, Gerard P.; and Viallefont, Christian H., 4,239,273, Cl. 294-88.000.

Podry, John M.: *See—*
Zurlinden, Cyril P., III; Howe, Charles W.; and Podry, John M., 4,238,879, Cl. 29-705.000.

Poetsch, Dieter; and Becker, Werner, to Bosch, Robert GmbH. Method for the additive and multiplicative spurious signal compensation. 4,240,103, Cl. 358-21.00R.

Pohle, Richard H., to United States of America, Air Force. Grating output wavefront sampling system. 4,239,392, Cl. 356-354.000.

Poisson, Norman D.: *See—*
Jacobson, Chester F.; and Poisson, Norman D., 4,238,883, Cl. 30-162.000.

Polak, Pawel: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Polaroid Corporation: *See—*
Norris, Philip R., 4,239,365, Cl. 354-295.000.
Shenk, Edwin K., 4,239,354, Cl. 352-140.000.

Polizzotti, David M.; and Steelhammer, Joe C., to Betz Laboratories, Inc. Free base amino alcohols as electrostatic precipitator efficiency enhancers. 4,239,504, Cl. 55-5.000.

Polo, Vincent; and Panunzio, Sergio R. Flexible reciprocating mechanical control. 4,238,973, Cl. 74-501.00R.

Polster, Louis S. Toaster control. 4,238,995, Cl. 99-331.000.

Polysius AG: *See—*
Adler, Josef, 4,239,300, Cl. 308-9.000.
Polystan A/S: *See—*
Hein, Lars, 4,239,464, Cl. 417-474.000.
Ponto, Robert A., to Innovative Electronics Design. Multiple input signal digital attenuator for combined output. 4,239,938, Cl. 179-1.0VL.
Pool, Gerald L.: *See—*
Horneys, David C.; and Pool, Gerald L., 4,239,275, Cl. 414-478.000.
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Bocharov, Vasily I.; and Kuprianov, Jury V. Linear induction motor. 4,239,997, Cl. 310-13.000.
Popov, Jury S.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,239,999, Cl. 310-52.000.
Popovich, Robert P. Method for continuous ambulatory peritoneal dialysis. 4,239,041, Cl. 128-213.00A.
Post Office: *See—*
Pantelis, Philippos, 4,239,608, Cl. 204-159.170.
Postma, Lambertus: *See—*
Koel, Gerrit J.; and Postma, Lambertus, 4,239,587, Cl. 156-659.100.
Poth, Willi: *See—*
Haina, Diether; Poth, Willi; and Waidelich, Wilhelm, 4,240,133, Cl. 362-293.000.
Powell, Robert C., to Weinschel Engineering Co., Inc. Two stub tuner in waveguide bend. 4,240,050, Cl. 333-33.000.
PPG Industries Canada, Ltd.: *See—*
Goldsmith, Elmar L., 4,239,287, Cl. 299-4.000.
Thompson, Robert E.; and Antemuik, Henry A., 4,239,288, Cl. 299-5.000.
PPG Industries, Inc.: *See—*
Allersma, Ties; and Simpson, James E., 4,239,532, Cl. 75-93.00R.
Barch, Herbert W.; and Blair, Rudolph, 4,239,162, Cl. 242-43.00R.
Breininger, J. Shannon; and Greenberg, Charles B., 4,239,816, Cl. 427-168.000.
Cathers, William P.; and Dorn, Charles W., Jr., 4,239,016, Cl. 118-624.000.
Girgis, Mikhail M., 4,239,800, Cl. 428-374.000.
Richardson, Kenneth W., 4,239,738, Cl. 423-292.000.
Pratap, Prem, to Carrier Corporation. Trip valve construction. 4,239,186, Cl. 251-255.000.
Pratt, George C., to Glacier Metal Company Limited, The. Method for manufacturing an elongated strip bearing. 4,239,715, Cl. 264-70.000.
Press, Jeffery B., to American Cyanamid Company. Novel 4-(substituted-aminophenoxy)-3-thiophenemethanols. 4,239,898, Cl. 549-65.000.
Pressler, Klaus: *See—*
Rebling, Rolf; Scheffler, Gerhard; Pressler, Klaus; and Schenk, Klaus D., 4,239,761, Cl. 424-250.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for producing acetaldehyde. 4,239,704, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for producing acetaldehyde. 4,239,705, Cl. 568-487.000.
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Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, to Allen & Hanburys Limited. Pharmacologically active compounds. 4,239,769, Cl. 424-274.000.
Prichard, Robert J.: *See—*
Norton, Lyle K.; Prichard, Robert J.; and Ochi, Margit K., 4,240,119, Cl. 358-297.000.
Prillieux, Marcel: *See—*
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Aust, Heinrich; Budich, Wolfgang; Nowak, Heinz; and Primessing, Franz, 4,239,574, Cl. 156-267.000.
Printronix, Inc.: *See—*
Matula, Jerry; Radke, Glen R.; and Barrus, Gordon B., 4,239,403, Cl. 400-322.000.
Prinz, Richard: *See—*
Braese, Hans-Eberhard; Fischer, Winfried; Hardt, Dietrich; Prinz, Richard; and Serini, Volker, 4,239,861, Cl. 525-151.000.
Pritty, David W., to University of Strathclyde. Apparatus for use in ordering trials. 4,239,958, Cl. 235-92.0AC.
Prochnow, Rudolf, to Robert Bosch GmbH. Broadband magnetic tape transducer head. 4,240,121, Cl. 360-122.000.
Procter & Gamble Company, The: *See—*
Gellert, Dale A., 4,239,043, Cl. 128-285.000.
Gilbert, Lawrence A.; and Leist, Jeffrey R., 4,239,639, Cl. 252-90.000.
Kingry, Gary W., 4,239,660, Cl. 252-528.000.
Ludwa, Raymond J., 4,239,792, Cl. 428-198.000.
Murphy, Alan P., 4,239,659, Cl. 252-524.000.
Trokhan, Paul D., 4,239,065, Cl. 139-383.00A.
Produits Chimiques Ugine Kuhlmann: *See—*
Bonnet, Evelyne J. M.; and Gangneux, Philippe Y. E., 4,239,868, Cl. 525-279.000.
Pigasse, Daniel, 4,239,685, Cl. 260-314.500.
Professional Chemical & Color, Inc.: *See—*
Kelly, David; Vidal, Michael; and Rosenthal, Saul, 4,239,490, Cl. 8-499.000.
Professional Packaging Limited: *See—*
Holmes, Gordon W., 4,239,051, Cl. 133-8.00R.
Progressive Blasting Systems: *See—*
Van Kuiken, Lewis L., Jr., 4,239,804, Cl. 428-409.000.
Prough, James R., to Kamyr, Inc. Method of maintaining uniformity of fibrous material fed to a continuous digester. 4,239,590, Cl. 162-49.000.
Pullman Incorporated: *See—*
Pavolka, John D., 4,239,424, Cl. 406-157.000.
Puri, Ashok K., to Union Carbide Canada Limited. Pressure contact construction for drycell batteries. 4,239,840, Cl. 429-159.000.
Purification Sciences Inc.: *See—*
Lowther, Frank E., 4,238,925, Cl. 60-39.46R.
Purkapile, Emerson V.: *See—*
Oltman, John P.; and Purkapile, Emerson V., 4,239,195, Cl. 269-16.000.
Pyles, Gerald D., to RCA Corporation. Turntable drive system for video disc player. 4,239,237, Cl. 274-1.00E.
Quade, Henry H.: *See—*
Kesl, Elmer M.; Quade, Henry H.; and Sammarco, Peter, 4,238,916, Cl. 56-106.000.
Quantel Limited: *See—*
Taylor, Richard J.; and Kellar, Paul R. N., 4,240,104, Cl. 358-22.000.
Quinci, Emanuel: *See—*
Konars, Clement R.; Quinci, Emanuel; and Vascotto, Mario, 4,239,117, Cl. 209-553.000.
Rabinowitz, Charles M.; and Camp, Donald A., to United Technologies Corporation. Mechanical resonator oscillator having redundant parallel drive circuits. 4,240,047, Cl. 331-154.000.
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Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S., 4,239,875, Cl. 526-214.000.
Radke, Glen R.: *See—*
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Rail Bearing Service: *See—*
Van Sickle, Robert J., 4,238,875, Cl. 29-148.40S.
Rainer, Georg, to Byk Gulden Lomberg Chemische Fabrik GmbH. Pyrazol-1-ylphenylacetic acids. 4,239,901, Cl. 560-34.000.
Rainville Company, Inc.: *See—*
Rainville, Dewey, 4,239,475, Cl. 425-526.000.
Rainville, Dewey, to Rainville Company, Inc. Apparatus for making oriented containers. 4,239,475, Cl. 425-526.000.
Ramsay, John R.: *See—*
Gauthier, John A.; Shaver, David M.; and Ramsay, John R., 4,239,941, Cl. 179-84.00R.
Ramsey Engineering Company: *See—*
Sniezek, Joseph T.; Chase, Paul W.; and Miller, Wendell D., 4,238,956, Cl. 73-861.010.
Rao, G. R. Mohan: *See—*
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,239,993, Cl. 307-355.000.
Rapp, Willard E., to Western Electric Company, Inc. Fabrication of screen devices. 4,238,877, Cl. 29-402.110.
Rasmussen, Chris R., to McNeilab, Inc. Method for relieving irritable bowel syndrome symptoms. 4,239,768, Cl. 424-273.00R.
Rasmussen, William R., Jr., to Lucht Engineering, Inc. Photographic printer. 4,239,377, Cl. 355-29.000.
Ratzeburg, Wolfgang, to Steag A.G. Process for the utilization of waste product tar-dust in gasification of granular fuel under pressure, especially of bituminous coal. 4,239,500, Cl. 48-202.000.
Rauschenberg, Richard: *See—*
Textoris, Melvin A.; and Rauschenberg, Richard, 4,239,932, Cl. 174-48.000.
Ravagnani, Frederick J.; and Schonfeld, Steven E., to Firestone Tire & Rubber Company, The. Method, composition and product with improved adhesion between a metal member and a contiguous rubber skim stock. 4,239,663, Cl. 260-5.000.
Raychem Corporation: *See—*
Dahl, Klaus J., 4,239,884, Cl. 528-486.000.
Marshall, Larry J., 4,239,485, Cl. 432-121.000.
Raymond, Joseph H., Jr., to Texas Instruments Incorporated. Field-effect transistor structure in multilevel polycrystalline silicon. 4,240,097, Cl. 357-71.000.
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Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, 4,239,180, Cl. 251-51.000.
Raytheon Company: *See—*
Lowenschuss, Oscar, 4,240,034, Cl. 328-14.000.
Williamson, James, 4,240,076, Cl. 343-7.0PL.
RCA Corporation: *See—*
Bosenberg, Wolfram A., 4,239,790, Cl. 427-54.100.
Coleman, Clyde F.; and Torrington, Leslie A., 4,239,108, Cl. 206-312.000.
Coleman, Clyde F., 4,239,238, Cl. 274-9.00B.
Dingwall, Andrew G. F., 4,240,093, Cl. 357-42.000.
Griffis, Patrick D., 4,239,939, Cl. 179-1.0GP.
Groeneweg, William H., 4,240,102, Cl. 358-11.000.
Hughes, Frederick R.; and Nyul, Paul, 4,240,090, Cl. 357-30.000.
Meise, William H., 4,240,111, Cl. 358-154.000.
Pyles, Gerald D., 4,239,237, Cl. 274-1.00E.

Robe, Thomas J., 4,240,042, Cl. 330-302.000.
Stewart, Roger G., 4,239,994, Cl. 307-359.000.
Wedam, Werner F., 4,240,013, Cl. 315-411.000.
Willis, Donald H., 4,240,012, Cl. 315-408.000.

Rebling, Rolf; Scheffler, Gerhard; Pressler, Klaus; and Schenk, Klaus D., to Asta-werke Aktiengesellschaft, Chemische Fabrik. Basically substituted ureas and processes for the treatment of virus diseases. 4,239,761, Cl. 424-250.000.

Redwine, Donald J.: *See*—
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Reed, Russell, Jr.; Munson, William O.; and Peterson, John A., to Thiokol Corporation. Propellants in caseless ammunition. 4,239,073, Cl. 149-19.910.

Reese, Edmund A.: *See*—
Hong, Ngai H.; Reese, Edmund A.; and Redwine, Donald J., 4,239,990, Cl. 307-262.000.
Hong, Ngai H.; and Reese, Edmund A., 4,239,991, Cl. 307-262.000.

Regel, Erik; Buchel, Karl; Haller, Ingo; and Plempel, Manfred, to Bayer Aktiengesellschaft. Fluorenyl-azolylmeythyl-carbinol compounds and their medicinal use. 4,239,765, Cl. 424-269.000.

Reggiani Macchine S.p.A.: *See*—
Giani, Adolfo; Panseri, Mario; and Mascioni, Umberto, 4,238,999, Cl. 101-116.000.

Regie Nationale des Usines Renault: *See*—
Leichie, Claude, 4,239,024, Cl. 123-416.000.

Reinecke, Erich, to WABCO Fahrzeugbremsen GmbH. Tire-pressure monitoring device. 4,238,955, Cl. 73-146.500.

Reinehr, Ulrich; Jungverdorben, Herman-Josef; Herbertz, Toni; Dross, Joachim; and Hirsch, Rolf-Burkhard, to Bayer Aktiengesellschaft. Process for the production of hydrophilic fibres. 4,239,722, Cl. 264-206.000.

Reitel, Christian; and Goethlich, Lutz, to BASF Aktiengesellschaft. Curable coating composition. 4,239,866, Cl. 525-440.000.

Reither, Karl: *See*—
Paul, Egbert; and Reither, Karl, 4,239,513, Cl. 55-118.000.

Reitner, Wilhelm, to Siemens Aktiengesellschaft. Device for attenuating noise emitted to the environment by noise-generating aggregates having simultaneous dissipation of heat. 4,239,398, Cl. 400-124.000.

Rekers, Hendrik: *See*—
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.

Rektorik, Vladimir: *See*—
Miculka, Zdenek; Janirek, Vladislav; Rektorik, Vladimir; and Bajak, Karel, 4,238,939, Cl. 69-43.000.

Rendoll Paper Corporation: *See*—
Froom, Thomas W., 4,239,115, Cl. 206-611.000.

Renis, Harold E.: *See*—
Skulnick, Harvey I.; and Renis, Harold E., 4,239,753, Cl. 424-181.000.

Rentschler, John A., to Bell Telephone Laboratories, Incorporated. Semitransparent and durable photolithography masks. 4,239,787, Cl. 427-38.000.

Research Corporation: *See*—
Teng, Lin-Nar; and Schmer, Gottfried, 4,239,664, Cl. 260-17.40R.

Research Products Corporation: *See*—
Fowler, Thomas P., 4,240,072, Cl. 340-664.000.

Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, to Mennica Panstwowa; and Instytut Nawozow Sztucznych. Grid of precious metals for the recovery of platinum metals escaping from a catalyst during the reaction, and especially of platinum during oxidation of ammonia. 4,239,833, Cl. 428-567.000.

Rettke, Wilfried: *See*—
Jung, Friedrich; and Rettke, Wilfried, 4,239,402, Cl. 400-175.000.

Reul, Charles G.: *See*—
Griggs, William L., III; Serrano, Ernest E.; Page, Dan; and Reul, Charles G., 4,239,047, Cl. 128-663.000.

Rexroth Corporation, The: *See*—
Smith, Brian W., 4,239,468, Cl. 418-78.000.

Rhein-Nadel Automation Gesellschaft mit beschrankter Haftung: *See*—
Stecklum, Klaus; and Grief, Norbert, 4,239,120, Cl. 209-682.000.

Rhyner, Heinz, to Ateliers des Charmilles S.A. Electrode wire EDM apparatus. 4,239,952, Cl. 219-69.00W.

Richards, Alan C.; and Khan, Riaz A., to Talres Development (N.A.) N.V. Novolak resins containing lactose and/or galactose. 4,239,665, Cl. 260-17.200.

Richardson, Kenneth W., to PPG Industries, Inc. Method for producing boron trichloride. 4,239,738, Cl. 423-292.000.

Richardson-Merrell Inc.: *See*—
Grunwell, Joyce F.; and Petrow, Vladimir, 4,239,681, Cl. 260-239.55R.

Richardson, Norman: *See*—
Marshall, Alan; and Richardson, Norman, 4,239,648, Cl. 252-389.00A.

Richardson, Raymond, to Nolan Systems Inc. Article handling apparatus capable of reversibly loading and unloading articles in predetermined rows. 4,239,432, Cl. 414-110.000.

Richardson, Robert H. Micro-marking label and apparatus. 4,239,261, Cl. 283-21.000.

Richmond, Henry, to American Cyanamid Company. Process for the preparation of diacetone acrylamide. 4,239,885, Cl. 544-97.000.

Richter, Johannes, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Pleat-and-pinch folding apparatus. 4,239,201, Cl. 493-444.000.

Ricoh Company, Ltd.: *See*—
Tatsumi, Susumu; Ikesue, Masumi; Hosaka, Masao; and Kasahara, Nobuo, 4,239,374, Cl. 355-14.00E.

Rider, Harlan H. Sliding door lock. 4,239,268, Cl. 292-5.000.

Ridgway, John W., to Interox Chemicals Limited. Process for the disinfection of water. 4,239,622, Cl. 424-130.000.

Ridley, Richard D., to Occidental Oil Shale, Inc. In situ oil shale retort with intermediate gas control. 4,239,283, Cl. 299-2.000.

Ridley, Richard D.; and Fernandes, Robert J., to Occidental Oil Shale, Inc. Situ retort with high grade fragmented oil shale zone adjacent the lower boundary. 4,239,284, Cl. 299-2.000.

Riedel, Tilo, to Etablissements Francois Salomon & Fils. Binding actuated ski brake. 4,239,254, Cl. 280-605.000.

Rieder, Walter E., to Cincinnati Milacron Inc. Novel diamide and lubricants containing same. 4,239,635, Cl. 252-34.000.

Riegel Textile Corporation: *See*—
Gore, Graves T., 4,239,578, Cl. 156-361.000.

Riehm, Theodor; Auel, Theodor; and Spatz, Wilhelm, to Benckiser-Knapsack GmbH. Xylose and xylitol separately purified in same ion exchanger. 4,239,922, Cl. 568-863.000.

Ries, Karl; Lather, Dieter; Kaiser, Dieter; Hannoschock, Kurt; and Simoneit, Gunter, to Mannesmann Aktiengesellschaft. Test head for ultrasonic testing of structural material. 4,238,963, Cl. 73-644.000.

Rieter Machine Works, Ltd.: *See*—
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Rietsch, Eike: *See*—
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Ritchie, Lloyd I. System for producing veneer from deteriorated core logs. 4,239,071, Cl. 144-209.00R.

Ritter, Gerhard: *See*—
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,239,951, Cl. 219-56.000.

Ritter, Josef: *See*—
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,239,951, Cl. 219-56.000.

Ritter, Klaus: *See*—
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,239,951, Cl. 219-56.000.

Ritter, Perry B.: *See*—
Day, Edward A.; Seay, Glenn E.; and Ritter, Perry B., 4,239,004, Cl. 102-28.00R.

Ritzenthaler, Richard L.: *See*—
Arnold, Don C.; Silletti, Julio D.; Ritzenthaler, Richard L.; and Wilcox, Thomas J., 4,239,182, Cl. 251-61.200.

Robbins, John C.; and Kinrade, John D., to Scintrex Limited. Method for uranium determination. 4,239,964, Cl. 250-255.000.

Robe, Thomas J., to RCA Corporation. Bandwidth limited large signal IC amplifier stage. 4,240,042, Cl. 330-302.000.

Robert Bosch GmbH: *See*—
Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,239,022, Cl. 123-491.000.
Kofink, Wolfgang, 4,239,978, Cl. 307-16.000.
Konrath, Karl; and Schwarz, Manfred, 4,239,025, Cl. 123-366.000.
Prochnow, Rudolf, 4,240,121, Cl. 360-122.000.

Roberts, Frank, Jr., to United Technologies Corporation. Blade tip shroud for a compression stage of a gas turbine engine. 4,239,452, Cl. 415-172.00A.

Robertshaw Controls Company: *See*—
Brakebill, Harold G., 4,239,181, Cl. 251-61.500.

Roccaforte, Harry I.; and Sherwood, Irvin W., to Champion International Corporation. Glued folder. 4,239,104, Cl. 206-45.330.

Rock, Steven L.; and Clovis, James S., to Rohm and Haas Company. Cumene recovery. 4,239,508, Cl. 55-59.000.

Rocksvold, Alvin N., to Marvin Landplane. Compensating hitch. 4,239,251, Cl. 280-446.00A.

Rockwell International Corporation: *See*—
August, Rudolf R.; Strahan, Virgil H.; James, Kenneth A.; and Nichols, Donald K., 4,239,963, Cl. 250-231.00R.
Hallford, Ben R.; and Lutz, Bruce C., 4,240,052, Cl. 333-202.000.

Rode, Konrad, to WABCO Fahrzeugbremsen GmbH. Circuit for preventing the wheel velocity from exceeding the vehicle velocity in vehicles with antilocking brake systems. 4,239,295, Cl. 303-106.000.

Roderick, Guy A.: *See*—
Lampkin, Curtis M.; Roderick, Guy A.; and Nikodem, Robert B., 4,239,809, Cl. 427-74.000.

Roedel, George F., to General Electric Company. Solventless silicone resins. 4,239,877, Cl. 528-14.000.

Roesch, Alfred: *See*—
Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., 4,239,560, Cl. 148-189.000.

Roessler, Peter: *See*—
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Rogers, Dan: *See*—
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Rogic, Milorad M.: *See*—
Masilamani, Divakaran; and Rogic, Milorad M., 4,239,929, Cl. 585-442.000.

Rogov, Viktor F.; Lipatov, Nikolai K.; Patrushev, Gennady V.; Tatevosian, Ruben A.; and Titov, Mikhail Y. Plug for eliminating troublesome zones in wells. 4,239,112, Cl. 206-525.000.

Rohm GmbH: *See*—
Arndt, Peter J.; Lowitz, Joachim; and Wenzel, Franz, 4,239,876, Cl. 526-287.000.
Fink, Herbert; Huebner, Klaus; Dinklage, Horst; and Ottofrickenstein, Hans, 4,239,671, Cl. 260-29.6TA.
Rohm and Haas Company: *See*—
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Rollform Pty. Ltd.: *See*—
Mutton, John, 4,238,909, Cl. 49-504.000.
Rolligon Corporation: *See*—
Blagg, Leon, 4,239,439, Cl. 414-494.000.
Rolls, James A.; and Brenis, Kenneth L., to Diamond Shamrock Corporation. High bulk density rigid poly(vinyl chloride) resin powder composition and preparation thereof. 4,239,679, Cl. 260-42.490.
Ronald, Robert C.: *See*—
Gurusiddaiah, Sarangamat; Ronald, Robert C.; Magnuson, James A.; and McFadden, Bruce A., 4,239,690, Cl. 260-340.200.
Ronning, Asbjorn, to Steni A/S. Method for continuous production of corrugated sheets. 4,239,719, Cl. 264-137.000.
Roper, Ralph E., to General Tire & Rubber Company, The. Process and apparatus for making metal outers and inners. 4,238,949, Cl. 72-358.000.
Rorer, David L., to Teledyne Industries, Inc. Aircraft battery. 4,239,841, Cl. 429-179.000.
Rose, Charles F.: *See*—
Eubanks, Jerry D.; and Rose, Charles F., 4,239,093, Cl. 190-41.00R.
Rose, Edwin J., to Elite Engineering Limited. Crimping and cutting tool. 4,238,948, Cl. 72-332.000.
Rosenstein, David. Printing coder. 4,239,002, Cl. 101-377.000.
Rosenthal, Saul: *See*—
Kelly, David; Vidal, Michael; and Rosenthal, Saul, 4,239,490, Cl. 8-499.000.
Rossetti, Pierre C., to Le Silicium Semiconducteur SSC. Grooving and glassivating method for semiconductor wafers. 4,240,095, Cl. 357-49.000.
Rossy, Phillip; and Hoffmann, Werner, to BASF Aktiengesellschaft. Thiophene compounds and their manufacture. 4,239,897, Cl. 549-61.000.
Roth, Eldon N. Method for making jerky. 4,239,785, Cl. 426-266.000.
Roth, Mario: *See*—
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Milavec, Maria; and Wagner, Heribert, 4,239,763, Cl. 424-261.000.
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Sato, Yuichi, to Olympus Optical Co., Ltd. Electronically controlled self-timer for camera. 4,239,363, Cl. 354-238.000.
Satoh, Daisuke: *See*—
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Scheffer, Terry J. Arrangement for a polychrome display. 4,239,349, Cl. 350-347.00R.
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Pfeiffer, Heinrich; and Speck, Ulrich, 4,239,747, Cl. 424-5.000.
Schlein, Allen P. Surgical knife. 4,239,045, Cl. 128-305.000.
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Schlickmann, Helmut: *See*—
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Schnabel, Eugen, to Bayer Aktiengesellschaft. N-Carboxyacylaminoacid esters, processes for their production and their diagnostic use. 4,239,902, Cl. 560-41.000.
Schneider, Fritz W., to Martin Sweets Company, Inc., The. High velocity mixing system. 4,239,732, Cl. 422-133.000.
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Schonmeier, Herbert; and Dropczynski, Hartmut, to Jagenberg Werke Aktiengesellschaft. Broad-drawing apparatus. 4,239,142, Cl. 226-194.000.
Schrader, Paul D., to General Electric Company. High pressure charge storage system. 4,238,932, Cl. 62-197.000.
Schrenker, Helge, to Hewlett-Packard Company. Apparatus for producing gradient elution in a liquid chromatographic system. 4,239,623, Cl. 210-96.100.
Schreyer, Gerd; Geiger, Friedhelm; and Hensel, Jorg. Process for the production of alkyl sulfonic acids. 4,239,696, Cl. 260-513.00R.
Schroder, Rolf; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Plant growth regulating compositions and methods using alpha-isocyanocarboxylic acid compounds. 4,239,528, Cl. 71-105.000.
Schroeter, Siegfried H.; and Olson, Daniel R., to General Electric Company. Abrasion resistant silicone coated polycarbonate article. 4,239,798, Cl. 428-331.000.
Schubert, Keith E.: *See*—
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Schwarz, William M., Jr., to Xerox Corporation. Development system. 4,239,017, Cl. 118-656.000.
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Schweizer, Eduard H. Storage and demonstration device particularly for card-type display objects. 4,239,307, Cl. 312-183.000.
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DeFilipps, Fred A.; Lipper, Roy O.; Winters, Luther R., Jr.; Nordstrom, Larry A.; and Szechy, Daniel J., 4,239,404, Cl. 400-613.000.
Scott, Charles M.; and Feast, Alan A. J., to I.S.R. Holding SARL. Aqueous emulsion polymerization of vinyl monomers using mixtures of emulsifiers. 4,239,669, Cl. 260-29.60R.
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Stiles, Kenneth M., 4,239,335, Cl. 350-96.230.
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Sempler, Vance A. Encapsulated denture adhesive and method of use. 4,239,488, Cl. 433-180.000.
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Serini, Volker: *See*—
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Serlin, Irving, to Monsanto Company. Coating compositions comprising polymer blends. 4,239,858, Cl. 525-57.000.
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Seyler, Jay K.: *See*—
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Shanoski, Henry; and Griffith, Richard M., to General Tire & Rubber Company, The. In-mold coating of structural foams and resultant product. 4,239,796, Cl. 428-315.000.
Sharp, Keith W.; and Sparlin, Derry D., to Baker International Corporation. Acid soluble coating for well screens. 4,239,084, Cl. 166-278.000.
Sharp, Shelby P.: *See*—
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Shaver, David M.: *See*—
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deJong, Aaldert J.; and Heijmen, Hendricus J., 4,239,923, Cl. 568-875.000.
Miller, Charles R., 4,239,859, Cl. 525-98.000.
Mulder, Albertus J.; and Verbrugge, Pieter A., 4,239,707, Cl. 570-130.000.
Slaugh, Lynn H., 4,239,872, Cl. 526-105.000.
ten Haken, Pieter; and Webb, Shirley B., 4,239,889, Cl. 544-335.000.
Shenk, Edwin K., to Polaroid Corporation. Autofocus movie camera having improved focus response. 4,239,354, Cl. 352-140.000.
Sheridan, Richard C.; and McCullough, John F., to Tennessee Valley Authority. Manufacture of purified diammonium phosphate. 4,239,739, Cl. 423-308.000.
Sherman, Michael I., to Kamyr, Inc. Thick stock pump having flexible blades. 4,239,470, Cl. 418-153.000.
Sherwood, Irvin W.: *See*—
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Shinsenji, Masatake: *See*—
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Shipchandler, Mohammed T., to International Minerals & Chemical Corp. Allyl and propyl zearalenone derivatives and their use as growth promoting agents. 4,239,772, Cl. 424-279.000.
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Shope, Thomas, to CP Test Services-Valvco, Inc. Valve service box having means for securing different sized valves against rotation. 4,239,056, Cl. 137-370.000.
Shoptaugh, Philip L. Peg board game. 4,239,230, Cl. 273-264.000.
Shtarkman, Boris P.: *See*—
Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S., 4,239,875, Cl. 526-214.000.
Siddall, Mark B., to Teledyne Industries, Inc. Sponge ring feed for iodide crystal bar cells. 4,239,531, Cl. 75-84.400.
Siebrecht-Reuter, Gerd, to Hilti Aktiengesellschaft. Expansion dowel for spaced mounting of parts on a support structure. 4,238,987, Cl. 85-83.000.
Siegenthaler, Andreas, to BBC Brown, Boveri & Company Limited. Device for measuring the potential of an alternating current carrying inner conductor of an encased high-voltage switching mechanism. 4,240,031, Cl. 324-126.000.
Siemens Aktiengesellschaft: *See*—
Brajder, Antonio, 4,239,989, Cl. 307-255.000.
Golser, Hans, 4,240,045, Cl. 331-94.50D.
Guenther, Gerd J., 4,239,933, Cl. 178-17.500.
Krause, Gerhard; and Spaeth, Werner, 4,240,087, Cl. 357-19.000.
Reitner, Wilhelm, 4,239,398, Cl. 400-124.000.
Tauber, Reinhard, 4,240,035, Cl. 329-50.000.
Thoma, Ferdinand, 4,240,148, Cl. 364-478.000.
Siemer, Sidney R., to W. R. Grace & Co. Substituted ureas as sugarcane ripeners. 4,239,526, Cl. 71-92.000.
Siemonsen, Hans-Peter: *See*—
Linberg, Waldemar; Roth, Mario; and Siemonsen, Hans-Peter, 4,239,274, Cl. 294-114.000.
Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See*—
deWitt, Paolo; and Tinti, Maria O., 4,239,702, Cl. 568-435.000.
Silberman, Raphael J.; Tilton, Frederick T.; and Smith, Everett H., to Baker International Corporation. Method and apparatus for rotating tubing conduits. 4,239,083, Cl. 166-117.700.
Silletti, Julio D.: *See*—
Arnold, Don C.; Silletti, Julio D.; Ritzenthaler, Richard L.; and Wilcox, Thomas J., 4,239,182, Cl. 251-61.200.
Silver Seiko, Ltd.: *See*—
Nakaoka, Mitsuo, 4,238,937, Cl. 66-60.00H.
Simane, Zdenek: *See*—
Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; Orth, Dieter; Wild, Albrecht; and Simane, Zdenek, 4,239,759, Cl. 424-248.400.
Simko, Aladar O., to Ford Motor Company. Fuel injection system for dual combustion chamber engine. 4,239,023, Cl. 123-275.000.
Simmons, Bjorn, to Aktiebolaget Bofors. Device for an electric igniter. 4,239,005, Cl. 102-28.00R.
Simmons, Joseph. Sand deflector for automatic molding machine. 4,239,079, Cl. 164-200.000.
Simoneit, Gunter: *See*—
Ries, Karl; Lather, Dieter; Kaiser, Dieter; Hannoschock, Kurt; and Simoneit, Gunter, 4,238,963, Cl. 73-644.000.
Simpkins, Ligaya M.: *See*—
Vogt, B. Richard; and Simpkins, Ligaya M., 4,239,896, Cl. 548-378.000.
Simpson, James E.: *See*—
Allersma, Ties; and Simpson, James E., 4,239,532, Cl. 75-93.00R.
Sinclair, Arthur C.: *See*—
Carney, Ronald E.; Devault, Robert L.; McAlpine, James B.; and Sinclair, Arthur C., 4,239,752, Cl. 424-180.000.
Skachkov, Jury V.: *See*—
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,239,999, Cl. 310-52.000.
Skalski, Andrzej: *See*—
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.
Skendrovic, Lawrence, to William M. Bailey Company. Industrial metallurgical delining assembly. 4,239,291, Cl. 299-70.000.
SKF Industrial Trading & Development Company B.V.: *See*—
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.
SKF Industries, Inc.: *See*—
Baile, George H., 4,239,632, Cl. 252-12.000.
SKF Kugellagerfabriken GmbH: *See*—
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,239,298, Cl. 308-6.00C.
Skil Corporation: *See*—
Kilinskis, David C.; and Vassos, Louis J., 4,240,022, Cl. 320-23.000.
Skilliter, Robert T., Jr., to ACME Specialty Manufacturing Co., The. Vehicle sun visor. 4,239,278, Cl. 296-97.00F.

Skinner, David H.; and Brown, Jeffrey H., to Broken Hill Proprietary Company Limited, The. Pad for railway rail fastenings. 4,239,156, Cl. 238-277.000.

Skolnick, Phil: *See—*
Paul, Steven M.; and Skolnick, Phil, 4,239,744, Cl. 424-1.000.

Skowronski, Boleslaw: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Skulnick, Harvey I.; and Renis, Harold E., to Upjohn Company, The. Composition of matter and process. 4,239,753, Cl. 424-181.000.

Slack, Glen A.; and Knapp, Warren S., to General Electric Company. Diamond and cubic boron nitride grinding wheels with improved silver alloy bonds. 4,239,502, Cl. 51-295.000.

Slakhorst, Justinus W. H. G.: *See—*
Van Alphen, Leendert G.; Slakhorst, Justinus W. H. G.; and Vogel, Pieter M., 4,240,128, Cl. 361-433.000.

Slatten, Arvid; Bech, Harald; and Olsen, Olav, to A/S Hoyer-Ellefsen, Ing. T. Furuholmen A/S; and Ing. F. Selmer A/S. Multi-purpose marine structure. 4,239,417, Cl. 405-195.000.

Slaugh, Lynn H., to Shell Oil Company. Olefine polymerization with supported catalysts. 4,239,872, Cl. 526-105.000.

Slim, David H.: *See—*
Gorbold, Jonathan M.; and Slim, David H., 4,240,100, Cl. 358-10.000.

Sloan, Kenneth B.: *See—*
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,239,757, Cl. 424-241.000.

Smilgys, Bruno S.; and Smilgys, David B. Power tool safety clutch. 4,239,096, Cl. 192-103.00C.

Smilgys, David B.: *See—*
Smilgys, Bruno S.; and Smilgys, David B., 4,239,096, Cl. 192-103.00C.

Smith, Brian W., to Rexroth Corporation, The. Apparatus for controlling pressure distribution in gear pump. 4,239,468, Cl. 418-78.000.

Smith, Everett H.: *See—*
Silberman, Raphael J.; Tilton, Frederick T.; and Smith, Everett H., 4,239,083, Cl. 166-117.700.

Smith, Jack E.: *See—*
Foster, Michael R.; and Smith, Jack E., 4,239,733, Cl. 422-179.000.

Smith, James D. B.; and Kauffman, Robert N., to Westinghouse Electric Corp. Anaerobic resin curing system. 4,239,802, Cl. 428-377.000.

Smith, John E., to McGraw-Edison Company. Protective device. 4,240,122, Cl. 361-41.000.

Smith, Judson L. Brush arrangement and sequencing for turntable car wash. 4,239,551, Cl. 134-6.000.

Smith, Richard L., to Phillips Petroleum Company. Process for countering effects of fast poisons in continuous olefin polymerization. 4,239,870, Cl. 526-59.000.

Smith, Ross K.: *See—*
Bateman, Jess R.; Carpenter, Robert L.; and Smith, Ross K., 4,240,030, Cl. 324-110.000.

Smith, T. Basil; Howatt, John R.; and McKenna, John F., Jr., to Charles Stark Draper Laboratory, Inc., The. Fault-tolerant clock system. 4,239,982, Cl. 307-219.000.

Smiths Industries Limited: *See—*
Gibson, Harry; and Maycock, Peter F., 4,240,074, Cl. 340-753.000.

Snamprogetti: *See—*
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, 4,239,873, Cl. 526-114.000.

Sniezek, Joseph T.; Chase, Paul W.; and Miller, Wendell D., to Ramsey Engineering Company. Radiation attenuation weighing system for a vertical material feeder. 4,238,956, Cl. 73-861.010.

Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
Le Chatelier, Jacques, 4,238,920, Cl. 57-124.000.

Societe Chauvin Arnoux: *See—*
Forme, Jacques, 4,240,067, Cl. 340-870.370.

Societe d'Applications Generales d'Electricite et de Mecanique Sagem: *See—*
Barriac, Jacques, 4,238,889, Cl. 33-304.000.

Societe d'Etudes, Recherches et Constructions Electroniques SERCEL: *See—*
Hullein, Francois M. L.; and Cadet, Jean-Claude A. M., 4,240,069, Cl. 340-347.00P.

Societe Herve & Fils S.A.: *See—*
Denay, Andre M. J., 4,239,114, Cl. 206-610.000.

Societe Internationale de Mecanique Industrielle S.A.: *See—*
Menager, Jean, 4,239,241, Cl. 277-87.000.

Societe Nationale des Poudres et Explosifs: *See—*
Fontaine, Pierre, 4,238,988, Cl. 86-1.00R.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Bouru, Michel A., 4,239,451, Cl. 415-170.00R.
Joubert, Raymond J. M.; and Bouiller, Jean G., 4,238,927, Cl. 60-39.51H.

Societe Siderurgique Chatillon Neuves Maisons: *See—*
Eysn, Manfred; and Meyer, Daniel, 4,239,193, Cl. 266-243.000.

Socsil S.A.: *See—*
Golz, Roland, 4,239,460, Cl. 417-251.000.

Soffa, Albert: *See—*
Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, 4,239,144, Cl. 228-1.00R.

Solar Thermal Consultants Pty. Limited: *See—*
MacDonald, Robert W. G., 4,238,912, Cl. 52-173.00R.

Solbern Corp.: *See—*
Eisenberg, Bernard C.; and Walz, John C., 4,239,116, Cl. 209-523.000.

Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Bocharov, Vasily I.; and Kuprianov, Jury V., 4,239,997, Cl. 310-13.000.

Solomon, Harvey D.: *See—*
Cline, Harvey E.; Anthony, Thomas R.; and Solomon, Harvey D., 4,239,556, Cl. 148-38.000.

Somberg, Hans F. Mold for producing moldings from a plastic compound. 4,239,476, Cl. 425-556.000.

Sommer, Ruediger: *See—*
Wellendorf, Klaus; and Sommer, Ruediger, 4,240,117, Cl. 358-296.000.
Wellendorf, Klaus; and Sommer, Ruediger, 4,240,118, Cl. 358-296.000.

Sonntag, Alois: *See—*
Brandt, Jurgen; Herold, Ludwig; Pikorz, Wolfgang; and Sonntag, Alois, 4,240,099, Cl. 357-79.000.

Sonoda, Tomiya; and Washida, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing an input screen for an image intensifier. 4,239,791, Cl. 427-64.000.

Sony Corporation: *See—*
Komatsubara, Michimasa; and Shimizu, Ikuo, 4,238,893, Cl. 434-351.000.
Kurokawa, Hiromichi; Nakamura, Yasuo; Gando, Masayoshi; Okada, Haruhiko; Yamazaki, Masaru; and Yamanaka, Hideo, 4,240,006, Cl. 313-386.000.
Nakazawa, Hiroshi; and Baba, Yasuharu, 4,240,134, Cl. 363-21.000.

Sorenson, John F.; and Locke, Frank W., to Champion International Corporation. Storage box. 4,239,148, Cl. 229-36.000.

Southwire Company: *See—*
Berry, Milton E.; and Pariani, Ronald L., 4,239,191, Cl. 266-200.000.

Spada, Vittorio. Method for manufacturing phosphatic fertilizers having a high concentration, particularly calcium metaphosphate $Ca(PO_3)_2$. 4,239,523, Cl. 71-33.000.

Spaeth, Werner: *See—*
Krause, Gerhard; and Spaeth, Werner, 4,240,087, Cl. 357-19.000.

Spanke, Edwin A.: *See—*
Carrieri, Louis F.; and Spanke, Edwin A., 4,238,950, Cl. 72-446.000.

Sparks, Robert E.; Wahab, Mariam M.; and Mason, Norbert S., to Washington University. Method for modifying the pore size distribution of a microporous separation medium. 4,239,714, Cl. 264-45.500.

Sparlin, Derry D.: *See—*
Sharp, Keith W.; and Sparlin, Derry D., 4,239,084, Cl. 166-278.000.

Spatz, Wilhelm: *See—*
Riehm, Theodor; Auel, Theodor; and Spatz, Wilhelm, 4,239,922, Cl. 568-863.000.

Spaulding, Tedford H., to Bunker Ramo Corporation. Electrical connectors and assemblies therefor. 4,239,316, Cl. 339-91.00R.

Spear, John F., to Universal Towel Company Limited. Washing machine and accumulator device therefor. 4,238,938, Cl. 68-13.00R.

Speck, Ulrich: *See—*
Pfeiffer, Heinrich; and Speck, Ulrich, 4,239,747, Cl. 424-5.000.

Speckhart, Bernard S.: *See—*
Weiss, Donald J.; and Speckhart, Bernard S., 4,239,435, Cl. 414-136.000.

Spectrum X-Ray Corporation: *See—*
Hogan, William F., 4,239,412, Cl. 403-182.000.

Sperry Corporation: *See—*
Parrish, Charles A., 4,238,919, Cl. 56-341.000.

Spitzmesser, Gordon. Engine mount for marine craft. 4,239,172, Cl. 248-641.000.

Sprague, John M., to United States of America, America. Projectile pallet truck. 4,239,249, Cl. 280-47.200.

Springwald, Antoni: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Stadlin, Walter O.: *See—*
Fletcher, David L.; and Stadlin, Walter O., 4,240,149, Cl. 364-483.000.

Stafford, John P.; Inoshita, Minoru; and Winfrey, Gerald N., to Honeywell Information Systems Inc. CRT display terminal priority interrupt apparatus for generating vectored addresses. 4,240,140, Cl. 364-200.000.

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, to Boehringer Ingelheim GmbH. Substituted 2-phenylamino-2-imidazolines and salts thereof. 4,239,764, Cl. 424-263.000.

Stal Refrigeration AB: *See—*
Glanvall, Rune V., 4,239,467, Cl. 418-76.000.

Stalberg, Nils G.: *See—*
Enser, Mats A.; and Stalberg, Nils G., 4,239,151, Cl. 235-437.000.

Stamires, Dennis: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,239,651, Cl. 252-438.000.

Stamm, Robert H.; and Krause, Fred E., to Brooks & Perkins, Incorporated. Method and apparatus for forming shroud. 4,238,878, Cl. 29-421.00R.

Standard Brands Incorporated: *See—*
Antrim, Richard L.; Chan, Yuk-Charn; Crary, John R., Jr.; and Harris, Donald W., 4,239,906, Cl. 536-56.000.

Standard Oil Company: *See*—
Miloscia, William J.; and Trott, Louis R., 4,239,864, Cl. 525-316.000.
Standard Oil Company (Indiana): *See*—
Atkinson, Fred T.; Sharp, Shelby P.; and Sudduth, Lamar F., 4,239,630, Cl. 252-8.55B.
Steigelmann, Edward F.; and Hughes, Robert D., 4,239,506, Cl. 55-16.000.
Stanley, Louis, to Galexie Manufacturing Pty. Ltd. Drive and indexing mechanism for a rotatable drum chance device. 4,239,224, Cl. 273-143.00R.
Stanzione, Daniel C.: *See*—
Blahut, Donald E.; Copp, David H.; and Stanzione, Daniel C., 4,240,142, Cl. 364-200.000.
Staples, Luke: *See*—
Harris, Denis I.; and Staples, Luke, 4,239,503, Cl. 51-298.000.
Stastny, Charles J.: *See*—
Miknaitis, Sigitas; and Stastny, Charles J., 4,240,054, Cl. 335-152.000.
Steag A.G.: *See*—
Ratzeburg, Wolfgang, 4,239,500, Cl. 48-202.000.
Steck, Arnold; and Wirz, Armin, to Rieter Machine Works, Ltd. Cooling device and method for cooling a heated travelling thread. 4,238,921, Cl. 57-284.000.
Stecklum, Klaus; and Grief, Norbert, to Rhein-Nadel Automation Gesellschaft mit beschrankter Haftung. Device for the bunkering and assorted feeding of small parts. 4,239,120, Cl. 209-682.000.
Steelhammer, Joe C.: *See*—
Polizzotti, David M.; and Steelhammer, Joe C., 4,239,504, Cl. 55-5.000.
Steelman, Melvin W., to Tyler Refrigeration Corporation. Refrigerated case with movable fan panel. 4,239,518, Cl. 62-449.000.
Stefaniszyn, John: *See*—
Murphy, Peter; Dionne, Yvon O.; Kral, Jerry J.; and Stefaniszyn, John, 4,240,026, Cl. 324-54.000.
Steger, Donald J.: *See*—
Boyatt, Richard G., Jr.; and Steger, Donald J., 4,239,107, Cl. 206-225.000.
Steigelmann, Edward F.; and Hughes, Robert D., to Standard Oil Company (Indiana). Use of aqueous, non-sweep liquid during membrane separation. 4,239,506, Cl. 55-16.000.
Stenberg, Kaj O.; and Traven, Lars J. C., to Gambro AB. Apparatus and method for the diffusion of substances between two fluids separated by a semipermeable membrane. 4,239,728, Cl. 422-46.000.
Steni A/S: *See*—
Ronning, Asbjorn, 4,239,719, Cl. 264-137.000.
Stenz, Paul P., to C. A. Weidmuller KG. Terminal block for printed circuits. 4,239,324, Cl. 339-198.00G.
Stenzenberger, Horst, to Technochemie GmbH Verfahrenstechnik. Polyimide preparation from imido acyl halide. 4,239,883, Cl. 528-322.000.
Stepe, Visvaldis A.: *See*—
Lanz, William E.; and Stepe, Visvaldis A., 4,238,896, Cl. 37-141.00R.
Sterling Drug Inc.: *See*—
Bell, Malcolm R.; and Oesterlin, Rudolf, 4,239,687, Cl. 260-326.270.
Gitchel, Wayne B., 4,238,922, Cl. 60-39.050.
Michne, William F., 4,239,890, Cl. 546-74.000.
Sternberg, Gerd. Refuse bag holder. 4,238,868, Cl. 15-257.400.
Steuer, Robert R., to Multitronics Corporation. Cardiotachometer using autocorrelation techniques. 4,239,048, Cl. 128-666.000.
Stewart, Roger G., to RCA Corporation. Asymmetrically precharged sense amplifier. 4,239,994, Cl. 307-359.000.
Stewart-Warner Corporation: *See*—
Breitung, Edward J.; and Hickman, Ronald J., 4,239,947, Cl. 200-61.890.
Stiles, Kenneth M., to Sea-Log Corporation. Fiber reinforced optical fiber cable. 4,239,335, Cl. 350-96.230.
Stilling, Johann. Raceway for sign box. 4,240,130, Cl. 362-217.000.
Stires, John C., III. Programmable strip chart recorder. 4,240,083, Cl. 346-136.000.
Stoeckelmann, Guenter: *See*—
Fabian, Wolfgang; Kranz, Joachim; and Stoeckelmann, Guenter, 4,239,549, Cl. 106-308.00Q.
Stoeckigt, Dieter: *See*—
Perner, Johannes; Stoeckigt, Dieter; Diessel, Paul; Merger, Franz; and Paetsch, Juergen, 4,239,552, Cl. 134-28.000.
Perner, Johannes; Diessel, Paul; Stoeckigt, Dieter; Merger, Franz; and Paetsch, Juergen, 4,239,641, Cl. 252-142.000.
Stoller, Patricia S.; Garner, Gerald D.; and Krug, John A., Jr. Automatic air inlet and outlet valve assembly. 4,239,059, Cl. 137-587.000.
Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., to ACF Industries, Inc. Automatic air inlet and outlet valve assembly having upper chamber opening. 4,239,060, Cl. 137-587.000.
Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D., to ACF Industries, Incorporated. Collapsible trailer hitch bumper block excessive impact protection assembly. 4,239,429, Cl. 410-59.000.
Stone, Julian: *See*—
Campbell, Joe C.; Lau, Kam-Yin; and Stone, Julian, 4,239,337, Cl. 350-151.000.
Stone, Samuel M.: *See*—
Dakss, Mark L.; Meslener, George J.; and Stone, Samuel M., 4,239,333, Cl. 350-96.210
Storandt, Ralf: *See*—
Biermann, Peter; Feucht, Rudi; Schmidt, Manfred; and Storandt, Ralf, 4,239,257, Cl. 280-615.000.
Story, Phillip M.: *See*—
Russell, Stephen E.; Story, Phillip M.; and Letcher, C. S., 4,239,546, Cl. 106-270.000.
Straga, Ivan T.: *See*—
Krupp, Carroll P.; and Straga, Ivan T., 4,239,262, Cl. 285-61.000.
Strahan, Virgil H.: *See*—
August, Rudolf R.; Strahan, Virgil H.; James, Kenneth A.; and Nichols, Donald K., 4,239,963, Cl. 250-231.00R.
Straubinger, Paul. Mold for forming frozen food product and cap member therefor. 4,239,175, Cl. 249-92.000.
Street, Donald A.: *See*—
Gonas, Albert J.; Packett, Marvin A.; and Street, Donald A., 4,239,279, Cl. 296-210.000.
Streicher, Kurt; and Nieden, Achim zur, to Klockner-Humboldt-Deutz Aktiengesellschaft. Pressure lubrication for internal combustion engines. 4,239,026, Cl. 123-196.00R.
Streit, Georg: *See*—
Missmahl, Bodo; and Streit, Georg, 4,238,881, Cl. 29-822.000.
Strem, Joseph G., to Mead Corporation, The. Jet drop printing ink composition. 4,239,544, Cl. 106-22.000.
Strickler, Rainer: *See*—
Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, 4,239,491, Cl. 8-532.000.
Striegl, Georg, to August Beck, Firma. Chucking reamer. 4,239,425, Cl. 408-181.000.
Strom, Stephen S.: *See*—
Bhada, Rohinton K.; Lange, Howard B., Jr.; and Strom, Stephen S., 4,239,996, Cl. 310-11.000.
Strutman, Lauren: *See*—
Strutman, Warren A., 4,239,977, Cl. 290-44.000.
Strutman, Lisa: *See*—
Strutman, Warren A., 4,239,977, Cl. 290-44.000.
Strutman, Warren A., to Strutman, Lisa; Strutman, Lauren; and Gross, Jerome A., a part interest to each. Surge-accepting accumulator transmission for windmills and the like. 4,239,977, Cl. 290-44.000.
Studencki, Jerzy: *See*—
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.
Stupica, Vekoslav A. Hydraulic engine. 4,238,928, Cl. 60-221.000.
Sudduth, Lamar F.: *See*—
Atkinson, Fred T.; Sharp, Shelby P.; and Sudduth, Lamar F., 4,239,630, Cl. 252-8.55B.
Sugimoto, Atsumi: *See*—
Inaba, Masao; Sugimoto, Atsumi; and Miyahara, Shigeru, 4,240,112, Cl. 358-160.000.
Sullivan, Thomas A.: *See*—
McBee, William C.; and Sullivan, Thomas A., 4,239,547, Cl. 106-274.000.
Sumari Engineering: *See*—
Heffernan, Patrick M., 4,239,987, Cl. 307-252.00B.
Sumitomo Chemical Company, Limited: *See*—
Hirohara, Hideo; Nabeshima, Shigeyasu; and Nagase, Tsuneyuki, 4,239,854, Cl. 521-31.000.
Sumitomo Electric Industries, Ltd.: *See*—
Yamamoto, Takaharu; Asai, Tsuyoshi; Fujimori, Naoji; and Tobioka, Masa-aki, 4,239,536, Cl. 75-238.000.
Sumiyomo Electric Industries, Limited: *See*—
Uchiyama, Hiromichi; Yaguchi, Eiichi; Nakamura, Akira; Maeda, Yoshio; and Watabe, Susumu, 4,239,094, Cl. 191-25.000.
Surface Technology, Inc.: *See*—
Feldstein, Nathan, 4,239,538, Cl. 106-1.110.
Surkov, Sergei A.: *See*—
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.
Suzuki, Katsunori: *See*—
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Day, Edward A.; Seay, Glenn E.; and Ritter, Perry B., 4,239,004, Cl. 102-28.00R.
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Richards, Alan C.; and Khan, Riaz A., 4,239,665, Cl. 260-17.200.
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Hosoya, Takeshi; Tanaka, Fumihiro; and Noguchi, Kazuo, 4,239,040, Cl. 128-213.00R.
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Misumi, Teruyuki; Tanaka, Kyogo; and Okuno, Osamu, 4,239,686, Cl. 260-325.0PH.
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Taniguchi, Hiroshi: *See*—
Hasegawa, Kenichi; Taniguchi, Hiroshi; and Kitamura, Sadafumi, 4,240,038, Cl. 330-149.000.
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Tarmann, Bruno, to Voest-Alpine Aktiengesellschaft. Cooled continuous casting mould. 4,239,078, Cl. 164-147.000.
Tartaglio, Robert L.: *See*—
Dinges, Frank; and Tartaglio, Robert L., 4,240,011, Cl. 315-292.000.
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Tauber, Reinhard, to Siemens Aktiengesellschaft. Digital demodulator on a semiconductor base. 4,240,035, Cl. 329-50.000.
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Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,101, Cl. 358-11.000.
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Teague, Richard M.: *See*—
Annas, Dulin L.; and Teague, Richard M., 4,238,977, Cl. 76-25.00R.
Technicon Instruments Corporation: *See*—
Clements, John A., 4,239,494, Cl. 23-230.00R.
Technochemie GmbH Verfahrenstechnik: *See*—
Stenzenberger, Horst, 4,239,883, Cl. 528-322.000.
Tecsports of Oxford Limited: *See*—
Farr, Eric, 4,239,215, Cl. 273-29.00A.
Teledyne Industries, Inc.: *See*—
Rorer, David L., 4,239,841, Cl. 429-179.000.
Siddall, Mark B., 4,239,531, Cl. 75-84.400.
Wolf, Raymond A., 4,238,964, Cl. 73-714.000.
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Hemens, James F., 4,238,972, Cl. 74-473.00P.
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Andren, Birger L.; and Svensson, Lars T. E., 4,239,934, Cl. 375-113.000.
Kjoller, Hans O. S., 4,240,136, Cl. 364-200.000.
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Perkins, Derrick O., 4,239,992, Cl. 307-265.000.
Teng, Lin-Nar; and Schmer, Gottfried, to Research Corporation. Antithrombogenic PVP-heparin polymer. 4,239,664, Cl. 260-17.40R.
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Sheridan, Richard C.; and McCullough, John F., 4,239,739, Cl. 423-308.000.
Terral, Ben D., to Camco, Incorporated. Multiple flow valves and sidepocket mandrel. 4,239,082, Cl. 166-117.500.
Terumo Corporation: *See*—
Hasegawa, Hiroshi; and Fukasawa, Hiromichi, 4,239,729, Cl. 422-48.000.
Tesa S.A.: *See*—
Lendi, Georges; and Voinescu, Nicolae, 4,238,885, Cl. 33-143.00L.
Tessler, Martin: *See*—
Gaspar, Lawrence A.; Tessler, Martin; and Malcolm, Alexander R., 4,239,592, Cl. 162-175.000.
Texaco Development Corp.: *See*—
Marquis, Edward T.; and Yeakey, Ernest L., 4,239,700, Cl. 564-157.000.
Rowton, Richard L., 4,239,856, Cl. 521-118.000.
Zimmerman, Robert L., 4,239,855, Cl. 521-115.000.
Zimmerman, Robert L.; McEntire, Edward E.; and Klein, Howard P., 4,239,916, Cl. 562-574.000.
Texaco Inc.: *See*—
Davis, Lorne A., Jr., 4,240,028, Cl. 324-61.00R.
Texas Instruments Incorporated: *See*—
Chauvel, Gerard, 4,240,138, Cl. 364-200.000.
Hong, Ngai H.; Reese, Edmund A.; and Redwine, Donald J., 4,239,990, Cl. 307-262.000.
Hong, Ngai H.; and Reese, Edmund A., 4,239,991, Cl. 307-262.000.
Kuo, Chang-Kiang, 4,240,092, Cl. 357-41.000.
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,239,993, Cl. 307-355.000.
Raymond, Joseph H., Jr., 4,240,097, Cl. 357-71.000.
Texas Plastics Industries, Inc.: *See*—
Callicoatte, Jerry D., 4,239,062, Cl. 138-96.00R.
Texas Utilities Services, Inc.: *See*—
Dick, David C.; and Hurt, James M., Jr., 4,239,711, Cl. 261-109.000.
Textoris, Melvin A.; and Rauschenberg, Richard, to GF Business Equipment, Inc. Partition wiring system. 4,239,932, Cl. 174-48.000.
Textron, Inc.: *See*—
Brent, Robert G., 4,239,244, Cl. 277-188.00R.
Broekhuizen, Willem; Gaffey, Troy M.; Joglekar, Mukund M.; and Neathery, William D., 4,239,455, Cl. 416-145.000.
Cannon, Robert E., 4,238,871, Cl. 24-205.11R.
Joglekar, Mukund M.; Gaffey, Troy M.; Broekhuizen, Willem; and Neathery, William D., 4,239,456, Cl. 416-145.000.
Thellmann, Edward L.; and Gombach, Anton L., to Gould Inc. Thermally stable sintered porous metal articles. 4,239,557, Cl. 148-126.000.
Thepot, Jean M. L.: *See*—
Thibonnier, Jacques; Douard, Pierre-Rene; and Thepot, Jean M. L., 4,239,420, Cl. 406-2.000.

Thibonnier, Jacques; Douard, Pierre-Rene; and Thepot, Jean M. L., to Compagnie due Roneo and Fluidelec. Installation for the automatic and accounted storage and distribution of cash. 4,239,420, Cl. 406-2.000.
Thiel, Klaus P.: *See*—
Alameddine, Oussama; Briska, Marian; and Thiel, Klaus P., 4,239,810, Cl. 427-75.000.
Thieme, Omar M.; and Thieme, Ruby M. Table top golf game apparatus. 4,239,217, Cl. 273-87.400.
Thieme, Ruby M.: *See*—
Thieme, Omar M.; and Thieme, Ruby M., 4,239,217, Cl. 273-87.400.
Thiokol Corporation: *See*—
Reed, Russell, Jr.; Munson, William O.; and Peterson, John A., 4,239,073, Cl. 149-19.910.
Thoma, Ferdinand, to Siemens Aktiengesellschaft. Centrally controlled conveyor system. 4,240,148, Cl. 364-478.000.
Thomas Electronics, Inc.: *See*—
Seats, Peter; and Marcy, Henry O., 4,240,073, Cl. 340-703.000.
Thompson, Harris A. Dual control valve for positive pressure artificial respiration apparatus. 4,239,039, Cl. 128-205.240.
Thompson, Robert E.; and Antemuik, Henry A., to PPG Industries Canada, Ltd. Solution mining method utilizing sub-surface aquifer. 4,239,288, Cl. 299-5.000.
Thomson-CSF: *See*—
Lacombat, Michel; Graffin, Jean C.; and Antoine, Robert, 4,239,381, Cl. 355-53.000.
Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, to Delle-Alsthom. Compensated force valve with two seats. 4,239,180, Cl. 251-51.000.
Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See*—
Koenitzer, Joachim; Schmitz, Heinrich; and Jindra, Kurt, 4,239,817, Cl. 427-211.000.
Tilton, Frederick T.: *See*—
Silberman, Raphael J.; Tilton, Frederick T.; and Smith, Everett H., 4,239,083, Cl. 166-117.700.
Timby, Ernest A.; and Walsh, Rodney H., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid processing. 4,238,926, Cl. 60-39.46R.
Tinti, Maria O.: *See*—
deWitt, Paolo; and Tinti, Maria O., 4,239,702, Cl. 568-435.000.
Tioxide Group Limited: *See*—
Barnard, Brian; and Laverick, William T., 4,239,548, Cl. 106-300.000.
Tirtiaux, Robert: *See*—
Marin, Pierre D.; Prillieux, Marcel; and Tirtiaux, Robert, 4,239,634, Cl. 252-33.000.
Titov, Mikhail Y.: *See*—
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TMC Corporation: *See*—
Krob, Erwin; and Weigl, Erwin, 4,239,256, Cl. 280-605.000.
Tobias, Philip E. Optical density scanning head. 4,239,393, Cl. 356-407.000.
Tobioka, Masa-aki: *See*—
Yamamoto, Takaharu; Asai, Tsuyoshi; Fujimori, Naoji; and Tobioka, Masa-aki, 4,239,536, Cl. 75-238.000.
Todd, Timothy M.: *See*—
Apian, Frank F.; and Todd, Timothy M., 4,239,619, Cl. 209-214.000.
Tokuyama, Kiyotaka: *See*—
Okumura, Osamu; Sakatani, Takenobu; Kashiwada, Toshinobu; and Tokuyama, Kiyotaka, 4,239,662, Cl. 252-555.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Fukuda, Yasuo; Arai, Michio; and Yamamoto, Hidemi, 4,240,139, Cl. 364-200.000.
Hashimoto, Masaru; and Yoshinaga, Motoaki, 4,240,041, Cl. 330-288.000.
Hiraki, Shunichi; Kumamaru, Kuniaki; Aoyama, Masaharu; and Yonezawa, Toshio, 4,240,096, Cl. 357-63.000.
Matsumoto, Yoshihiro; and Kurii, Hajime, 4,240,137, Cl. 364-200.000.
Morita, Hiroshi; and Washida, Hiroshi, 4,239,350, Cl. 350-357.000.
Sonoda, Tomiya; and Washida, Hiroshi, 4,239,791, Cl. 427-64.000.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,239,661, Cl. 252-541.000.
Tolle, Russell W. Hitch positioning mechanism. 4,239,250, Cl. 280-446.00B.
Tomita, Keiji, to Kabushiki Kaisha Tomita Sangyo. Method and apparatus for folding and welding the marginal edges of a cover sheet. 4,239,572, Cl. 156-227.000.
Tomita, Tetsuo: *See*—
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.
Tomita, Yukio; and Nishio, Taketaro, to Hitachi Shipbuilding & Engineering Co., Ltd.; and Dainippon Screen Mfg. Co., Ltd. Method and apparatus for scan-photographing a subject such as a model. 4,239,379, Cl. 355-52.000.
Tomlinson, Harold W., Jr., to General Electric Company. Solid state imaging apparatus. 4,240,116, Cl. 358-213.000.
Tomlinson, Walter J., III: *See*—
Ashkin, Arthur; and Tomlinson, Walter J., III, 4,239,330, Cl. 350-96.180.
Tomsa, Vladimir: *See*—
Anderson, Norman R.; and Tomsa, Vladimir, 4,239,314, Cl. 339-89.00M.
Tomy Kogyo Co., Inc.: *See*—
Hori, Noritoshi, 4,239,222, Cl. 273-129.00W.
Kurita, Toshiaki, 4,239,220, Cl. 273-127.00R.
Tomy Kogyo Co., Ltd.: *See*—
Ogasawara, Toyotsugu, 4,239,207, Cl. 272-31.00A.
Topfer, Dieter: *See*—
Krause, Dieter; Topfer, Dieter; and Salzburg, Wolfgang, 4,239,368, Cl. 354-325.000.
Toray Industries, Inc.: *See*—
Inoue, Takehisa; and Tsunoi, Kazuo, 4,239,655, Cl. 252-455.00Z.
Uemura, Tadahiro; and Kurihara, Masaru, 4,239,545, Cl. 106-181.000.
Tornstrom, Eric: *See*—
Scharlack, Ronald S.; and Tornstrom, Eric, 4,239,555, Cl. 136-251.000.
Torres, Remy G. Training device for football or for all games using a small or large ball. 4,239,235, Cl. 273-395.000.
Torrington Company, The: *See*—
Wakunami, Teruaki, 4,239,304, Cl. 308-217.000.
Torrington, Leslie A.: *See*—
Coleman, Clyde F.; and Torrington, Leslie A., 4,239,108, Cl. 206-312.000.
Tosi, Kenneth F.; and McKee, John M., to Motorola, Inc. Piezoelectric transducer arrangement with integral terminals and housing. 4,240,002, Cl. 310-324.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Masutani, Takayoshi, 4,240,023, Cl. 322-99.000.
Ochiai, Takeshi, 4,240,071, Cl. 340-576.000.
Traven, Lars J. C.: *See*—
Stenberg, Kaj O.; and Traven, Lars J. C., 4,239,728, Cl. 422-46.000.
Treiber, Helmut, to AGFA-Gevaert AG. Method and apparatus for automatically recognizing photographic originals unsuitable for copying. 4,239,384, Cl. 355-68.000.
Triumph Werke Nurnberg A.G.: *See*—
Gluck, Otto; and Jakovski, Norbert, 4,239,406, Cl. 400-645.000.
Jung, Friedrich; and Rettke, Wilfried, 4,239,402, Cl. 400-175.000.
Trofimov, Vladimir A.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Bocharov, Vasily I.; and Kuprianov, Jury V., 4,239,997, Cl. 310-13.000.
Trokhan, Paul D., to Procter & Gamble Company, The. Papermachine clothing having a surface comprising a bilaterally staggered array of wicker-basket-like cavities. 4,239,065, Cl. 139-383.00A.
Trott, Louis R.: *See*—
Miloscia, William J.; and Trott, Louis R., 4,239,864, Cl. 525-316.000.
Trump, Martin R.: *See*—
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,101, Cl. 358-11.000.
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,106, Cl. 358-36.000.
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,109, Cl. 358-105.000.
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,113, Cl. 358-180.000.
Trupp, William H. Log holder. 4,239,198, Cl. 269-156.000.
TRW Inc.: *See*—
Inbar, Michael, 4,239,332, Cl. 350-96.200.
Tschetter, John J.: *See*—
Carlson, Russell R.; and Tschetter, John J., 4,238,966, Cl. 74-41.000.
Tsubota, Kazuya, to Kawasaki Steel Corporation. Method for rolling metal plate. 4,238,946, Cl. 72-199.000.
Tsuchiya, Hiroaki: *See*—
Ueno, Ryuzo; Tsuchiya, Hiroaki; Muramoto, Yasukazu; and Kuwae, Yoshihiko, 4,239,913, Cl. 562-425.000.
Tsuge, Yukio: *See*—
Kobayashi, Yoshimichi; Tsuge, Yukio; and Hirako, Susumu, 4,239,878, Cl. 528-45.000.
Tsukushi, Masanori; Hirasawa, Kunio; and Kashimura, Katsuichi, to Hitachi, Ltd. Grounded support tank type gas circuit breaker. 4,239,948, Cl. 200-148.00R.
Tsunoi, Kazuo: *See*—
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Tsuru, Michitaka: *See*—
Izumitani, Tetsuro; and Tsuru, Michitaka, 4,239,645, Cl. 252-301.40P.
Tsuyuki, Kaoru: *See*—
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.
Tu, Hosheng, to UOP Inc. High octane FCC process. 4,239,615, Cl. 208-120.000.
Tuck, Alan D., Jr., to Wilden Pump & Engineering Co. Pump diaphragm. 4,238,992, Cl. 92-103.50D.
Tuhy, Frank P., Jr.: *See*—
Bosik, Barry S.; and Tuhy, Frank P., Jr., 4,239,935, Cl. 179-84.00R.
TUPI (Panama) S.A.: *See*—
Tupper, Earl S., 4,238,863, Cl. 8-150.000.
Tupper, Earl S., to TUPI (Panama) S.A. Method of washing articles of clothing. 4,238,863, Cl. 8-150.000.
Turnage, Joseph R. Metered dispensers. 4,239,133, Cl. 222-476.000.
Turner, George F. A. M., to Ciba-Geigy AG. Sheet dispenser. 4,239,202, Cl. 271-18.000.

Turner, Ian: *See—*
Tacklind, Thomas A.; and Turner, Ian, 4,240,084, Cl. 346-153.000.
Tacklind, Thomas A.; and Turner, Ian, 4,240,085, Cl. 346-153.000.
Turner, Ronald L.: *See—*
Kindig, James K.; and Turner, Ronald L., 4,239,529, Cl. 75-1.00R.
Twiford, L. John. Method for altering tonal characteristics of a stringed musical instrument. 4,238,986, Cl. 84-309.000.
Tyler Refrigeration Corporation: *See—*
Steelman, Melvin W., 4,239,518, Cl. 62-449.000.
Tyson, Thomas E. Self-aligning multi-pin connector. 4,239,325, Cl. 339-89.00M.
Uchida, Isamu, to Laurel Bank Machine Co., Ltd. Paper delivery roller system. 4,239,203, Cl. 271-122.000.
Uchida, Kenji: *See—*
Sakamoto, Masakatsu; Uchida, Kenji; Honma, Isao; and Kamino, Yukishige, 4,239,423, Cl. 406-47.000.
Uchida, Toshio: *See—*
Kita, Nobuyuki; Uchida, Toshio; Ikeda, Sadaharu; and Sato, Shigeru, 4,239,850, Cl. 430-281.000.
Uchidoi, Masanori: *See—*
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Unarco Industries, Inc.: *See—*
Corey, Robert L., 4,239,100, Cl. 193-35.00R.
Klein, Herbert H., 4,239,122, Cl. 211-182.000.
Union Carbide Canada Limited: *See—*
Puri, Ashok K., 4,239,840, Cl. 429-159.000.
Union Carbide Corporation: *See—*
Aplan, Frank F.; and Todd, Timothy M., 4,239,619, Cl. 209-214.000.
Drnevich, Raymond F., 4,239,505, Cl. 55-12.000.
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Harper, Bill D., 4,239,857, Cl. 521-121.000.
Notaro, Frank, 4,239,827, Cl. 428-35.000.
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Beretta, David; Loveless, Frederick C.; and Nudenberg, Walter, 4,239,638, Cl. 252-73.000.
Matthews, Demetreos N.; Nudenberg, Walter; and Petersen, Henno A., 4,239,862, Cl. 525-240.000.
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Hughes, Paul R.; and Campbell, John E., 4,240,077, Cl. 340-500.000.
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Timby, Ernest A.; and Walsh, Rodney H., 4,238,926, Cl. 60-39.46R.
United States of America
Agriculture: *See—*
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,239,701, Cl. 564-15.000.
Scherer, James R., 4,239,390, Cl. 356-307.000.
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Cornell, Richard H., 4,239,053, Cl. 137-110.000.
Green, Leland D., 4,239,388, Cl. 356-5.000.
Pohle, Richard H., 4,239,392, Cl. 356-354.000.
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Buchanan, Thomas M., 4,239,749, Cl. 424-92.000.
Paul, Steven M.; and Skolnick, Phil, 4,239,744, Cl. 424-1.000.
Sprague, John M., 4,239,249, Cl. 280-47.200.
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Cason, Charles M., III; Perkins, James F.; and Jones, Robert W., 4,239,341, Cl. 350-294.000.
Larsen, Lawrence E.; and Jacobi, John H., 4,240,027, Cl. 324-57.00R.
Long, Richard L., 4,239,063, Cl. 138-123.000.
Woodward, Oakley M., 4,240,080, Cl. 343-817.000.
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Ohkawa, Tihiro, 4,239,594, Cl. 176-9.000.
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Allcock, Harry R.; Fuller, Timothy J.; and Matsumura, Kiyotoshi, 4,239,755, Cl. 424-209.000.
Interior: *See—*
Eisele, Judith A.; Bauer, Donald J.; and Bremner, Paul R., 4,239,735, Cl. 423-126.000.
McBee, William C.; and Sullivan, Thomas A., 4,239,547, Cl. 106-274.000.
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Lambson, Kenneth H. Pressure control valve. 4,239,057, Cl. 137-549.000.
Mazur, John T. Telescoping columns. 4,238,911, Cl. 52-111.000.
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Camp, Albert T.; Csanady, Elmer R.; and Mosher, Paul R., 4,239,561, Cl. 149-19.800.
Foa, Joseph V., 4,239,155, Cl. 239-265.170.
Kowalyshyn, Stephen; and Voorhees, John C., 4,239,012, Cl. 114-23.000.
Savitt, Jacob, 4,239,003, Cl. 102-27.00R.
U.S. Philips Corporation: *See—*
Andersson, Lars-Goran T., 4,240,060, Cl. 340-47.000.
Jonker, Herman D., 4,239,805, Cl. 428-446.000.
Koel, Gerrit J.; and Postma, Lambertus, 4,239,587, Cl. 156-659.100.
Van Alem, Antonius A. M.; and Vos, Cornelis H. J., 4,239,942, Cl. 179-100.10G.
Van Alphen, Leendert G.; Slakhorst, Justinus W. H. G.; and Vogel, Pieter M., 4,240,128, Cl. 361-433.000.
Wagner, Wolfgang, 4,239,972, Cl. 250-445.00T.
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Adell, Robert, 4,239,724, Cl. 264-328.800.
United Technologies Corporation: *See—*
Amelio, Armand F., 4,238,971, Cl. 74-471.00R.
Howard, Curtiss G.; Jordan, Lester W.; and Yaworsky, Chester E., 4,239,954, Cl. 219-121.0EH.
Lenox, Thomas G., 4,240,066, Cl. 340-870.290.
Rabinowitz, Charles M.; and Camp, Donald A., 4,240,047, Cl. 331-154.000.
Roberts, Frank, Jr., 4,239,452, Cl. 415-172.00A.
Universal Dynamics, Inc.: *See—*
Murdock, Dwight, 4,239,487, Cl. 433-7.000.
Universal Towel Company Limited: *See—*
Spear, John F., 4,238,938, Cl. 68-13.00R.
University of Delaware: *See—*
Barnett, Allen M.; Masi, James V.; and Hall, Robert B., 4,239,553, Cl. 136-256.000.
University of Illinois Foundation, The: *See—*
Venton, Duane L.; Le Breton, Guy C.; and Enke, Steven E., 4,239,778, Cl. 424-305.000.
University of Kentucky Research Foundation, The: *See—*
Carter, Willis M., 4,238,970, Cl. 74-457.000.
University of Strathclyde: *See—*
Pritty, David W., 4,239,958, Cl. 235-92.0AC.
Unsworth, William: *See—*
King, John F.; and Unsworth, William, 4,239,535, Cl. 75-168.00D.
UOP Inc.: *See—*
Atkinson, Geoffrey R.; and Edwards, Alan J., 4,239,472, Cl. 425-388.000.
Hutchings, Le Roi E., 4,239,614, Cl. 208-108.000.
Kwong, Gary W. Y., 4,239,497, Cl. 44-72.000.
Mikulicz, Michael Z., 4,239,931, Cl. 585-723.000.
Tu, Hosheng, 4,239,615, Cl. 208-120.000.
Upjohn Company, The: *See—*
Johnson, Roy A., 4,239,909, Cl. 542-422.000.
Skulnick, Harvey I.; and Renis, Harold E., 4,239,753, Cl. 424-181.000.
Wallach, Donald P., 4,239,780, Cl. 424-330.000.
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USV Pharmaceutical Corporation: *See—*
Youssefyeh, Raymond D.; and Wilson, Jeffrey D., 4,239,887, Cl. 544-184.000.
Utilux Pty. Limited: *See—*
Karl, Walter, 4,238,981, Cl. 83-151.000.
Vac-Tec Systems, Inc.: *See—*
Morrison, Charles F., Jr., 4,239,611, Cl. 204-298.000.
Vackier, Leo N.; and Van der Vliet, Lucien P., to AGFA-Gevaert N.V. Daylight unloading system for microfiche casettes. 4,239,366, Cl. 354-310.000.
Vadetec Corporation: *See—*
Kemper, Yves J., 4,238,976, Cl. 74-682.000.
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Allphin, N. Lee; Valentine, Fred S.; and Grams, Gary W., 4,239,930, Cl. 585-517.000.
Vamvakas, Michael, to Niagara Bottle Washer Manufacturing Co. Filter for removing fines. 4,239,626, Cl. 210-333.010.
Van Alem, Antonius A. M.; and Vos, Cornelis H. J., to U.S. Philips Corporation. Dual radial position servo to compensate for radial tracking failure in an optical disc player. 4,239,942, Cl. 179-100.10G.
Van Alphen, Leendert G.; Slakhorst, Justinus W. H. G.; and Vogel, Pieter M., to Aluminium Industrie Vaassen B.V.; and U.S. Philips

Corporation. Aluminum including cathode foil for electrolytic capacitors including a copper content. 4,240,128, Cl. 361-433.000.
Van Coffman, Michael. Pressure plug. 4,239,055, Cl. 137-315.000.
Van der Vliet, Lucien P.: *See*—
Vackier, Leo N.; and Van der Vliet, Lucien P., 4,239,366, Cl. 354-310.000.
Van Dyke, Ronald D.: *See*—
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Van Fleet, James L.: *See*—
Bevilacqua, Frank; Callaghan, Vincent M.; and Van Fleet, James L., 4,239,596, Cl. 176-37.000.
Van Horne, Arthur C.; and Young, James E., to Dataproducts Corporation. Form aligning knob. 4,239,405, Cl. 400-616.100.
Van Kuiken, Lewis L., Jr., to Progressive Blasting Systems. Method for treating metal articles for rust corrosion protection and article produced thereby. 4,239,804, Cl. 428-409.000.
Van Rijn, Antoon J. Water pressurizing installation. 4,239,054, Cl. 137-209.000.
Van Saun, William A., Jr., to FMC Corporation. Insecticidal esters of certain substituted 7-oxabicyclo[2.2.1]2,5-heptadiene methanols. 4,239,773, Cl. 424-285.000.
Van Sickle, Robert J., to Rail Bearing Service. Method of and apparatus for performing work functions on articles from opposite ends of the articles. 4,238,875, Cl. 29-148.40S.
Van Staveren, Hendricus C.: *See*—
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Van Vechten, James A.: *See*—
Ghez, Richard A.; Gunn, John B.; Hammer, Robert; and Van Vechten, James A., 4,239,586, Cl. 156-644.000.
van Zon, Cornelis, to Wafilin B.V. Apparatus for membrane filtration having an improved desalting effect. 4,239,624, Cl. 210-236.000.
Varian Associates, Inc.: *See*—
Anderson, Marvin H.; Chmyz, George; Daus, Carl D.; and Kneip, George D., Jr., 4,240,033, Cl. 324-321.000.
Vascotto, Mario: *See*—
Konars, Clement R.; Quinci, Emanuel; and Vascotto, Mario, 4,239,117, Cl. 209-553.000.
Vasiliev, Petr E.; Dvornin, Vladimir S.; Kondratiev, Alexandr V.; and Kravchenko, Vladimir F. Vibration motor. 4,240,141, Cl. 318-114.000.
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Kilinskis, David C.; and Vassos, Louis J., 4,240,022, Cl. 320-23.000.
Vaughan, Thomas J., to Micro Communications, Inc. Diplexer and multiplexer. 4,240,155, Cl. 370-69.000.
Veale, John R., to Plessey Peripheral Systems. Impact printer hammer assembly. 4,239,401, Cl. 400-144.200.
Venable, Phillip G.; and Horsch, Rudolf, to J. I. Case Company. Side shift assembly for earth-working implements. 4,239,085, Cl. 172-667.000.
Venton, Duane L.; Le Breton, Guy C.; and Enke, Steven E., to University of Illinois Foundation, The. Azaprostanoic acid analogs and their use as inhibitors of platelet aggregation. 4,239,778, Cl. 424-305.000.
Venus Scientific Inc.: *See*—
Galluppi, Filippo B., 4,239,960, Cl. 250-213.0VT.
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Mulder, Albertus J.; and Verbrugge, Pieter A., 4,239,707, Cl. 570-130.000.
Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH: *See*—
Biermann, Peter; Feucht, Rudi; Schmidt, Manfred; and Storandt, Ralf, 4,239,257, Cl. 280-615.000.
Verfahrenstechnik Dr. Ing. Kurt Baum: *See*—
Baum, Jorg P., 4,239,190, Cl. 266-158.000.
Viallefont, Christian H.: *See*—
Dodemont, Gerard P.; and Viallefont, Christian H., 4,239,273, Cl. 294-88.000.
Vianova Kunstharz, A.G.: *See*—
Zima, Herbert; and Dworak, Gert, 4,239,672, Cl. 260-29.70H.
Vicon N.V.: *See*—
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Victor Company of Japan, Limited: *See*—
Naruse, Tunehide, 4,239,637, Cl. 252-62.540.
Vidal, Michael: *See*—
Kelly, David; Vidal, Michael; and Rosenthal, Saul, 4,239,490, Cl. 8-499.000.
Vinatieri, James E., to Phillips Petroleum Company. Optimizing cosurfactant in microemulsion for specific oil. 4,239,628, Cl. 252-8.55D.
Vincent, David N.; and Golden, Ronald, to Champion International Corporation. Microspheric opacifying agents and method for their production. 4,239,646, Cl. 252-316.000.
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M. Super-conductive electrical machine having an improved system for maintaining vacuum in the stator/rotor space. 4,239,999, Cl. 310-52.000.
Virkar, Anil V.: *See*—
Miller, Gerald R.; and Virkar, Anil V., 4,239,838, Cl. 429-104.000.
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Myers, Donald W.; and Vivlamore, Samantha L., 4,239,727, Cl. 264-550.000.
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Hinova, Maya H.; and Parushev, Stoyan P., to Edinen Centar Po Chimia. Method for the electrolytic preparation of narwedine-type dienones. 4,239,605, Cl. 204-59.00R.
Vockenhuber, Karl: *See*—
Freudenschuss, Otto; Kantner, Otto; and Kittag, Gerd, 4,239,356, Cl. 354-23.00R.
Voest-Alpine Aktiengesellschaft: *See*—
Eysn, Manfred; and Meyer, Daniel, 4,239,193, Cl. 266-243.000.
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Vogel, Horst: *See*—
Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, 4,239,462, Cl. 417-373.000.
Vogel, Pieter M.: *See*—
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Vogt, B. Richard; and Simpkins, Ligaya M., to E. R. Squibb & Sons, Inc. 5-(Optionally substituted 2-aminophenyl)-1H-pyrazole-3-methanol. 4,239,896, Cl. 548-378.000.
Voinescu, Nicolae: *See*—
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Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P. Driving arrangement. 4,238,967, Cl. 74-758.000.
von Gutfeld, Robert J.: *See*—
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Voorhees, John C.: *See*—
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Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S. Method for producing prepolymers based on vinyl monomers. 4,239,875, Cl. 526-214.000.
Vos, Cornelis H. J.: *See*—
Van Alem, Antonius A. M.; and Vos, Cornelis H. J., 4,239,942, Cl. 179-100.10G.
Vought Corporation: *See*—
Brown, Hughie A., Jr.; and Walker, Joe L., 4,239,355, Cl. 353-87.000.
Vucinic, Theodore. Adapter for a fork lift truck. 4,239,446, Cl. 414-785.000.
Vyzkumny ustav kozedelny: *See*—
Miculka, Zdenek; Janirek, Vladislav; Rektorik, Vladimir; and Bajak, Karel, 4,238,939, Cl. 69-43.000.
W. R. Grace & Co.: *See*—
Siemer, Sidney R., 4,239,526, Cl. 71-92.000.
Weinberg, Alan S.; and Gillio-Tos, Mario, 4,239,799, Cl. 428-335.000.
WABCO Fahrzeugbremsen GmbH: *See*—
Reinecke, Erich, 4,238,955, Cl. 73-146.500.
Rode, Konrad, 4,239,295, Cl. 303-106.000.
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Kohl, Franz, 4,239,585, Cl. 156-617.0SP.
Wada, Yoneji. Filtering member and method for manufacturing the same. 4,239,627, Cl. 210-484.000.
Wade, Elman E., to United States of America, Energy. Nuclear reactor heat transport system component low friction support system. 4,239,598, Cl. 176-87.000.
Wafer, John A.: *See*—
Nelson, Hugh A.; Wafer, John A.; Koren, Paul P.; Salemi, Nicholas A.; and Maier, Alfred E., 4,240,053, Cl. 335-16.000.
Wafilin B.V.: *See*—
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Waghorne, Robert H.: *See*—
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Wagner, Heribert: *See*—
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Wagner, Wolfgang, to U.S. Philips Corporation. Device for computed tomography. 4,239,972, Cl. 250-445.00T.
Wahab, Mariam M.: *See*—
Sparks, Robert E.; Wahab, Mariam M.; and Mason, Norbert S., 4,239,714, Cl. 264-45.500.
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Wakunami, Teruaki, to Torrington Company, The. Bearing split cage. 4,239,304, Cl. 308-217.000.
Waldner, Michael: *See*—
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Walker, Joe L.: *See*—
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Wall, William F.: *See*—
Curtis, George C.; McInturff, Joe A.; Rubel, Herbert J.; and Wall, William F., 4,238,960, Cl. 73-462.000.

Wallach, Donald P., to Upjohn Company, The. Phospholipase A_2 inhibition. 4,239,780, Cl. 424-330.000.

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Walsh, Rodney H.: *See*—
Timby, Ernest A.; and Walsh, Rodney H., 4,238,926, Cl. 60-39.46R.

Walter, Lothar: *See*—
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Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.

Walton, Richard E., II, to Black & Decker Inc. Orbital jig saw. 4,238,884, Cl. 30-393.000.

Walton, Richard E., II, to Black & Decker Inc. Boring tool. 4,239,427, Cl. 408-213.000.

Waltrip, Owen R., to Nuclear Supreme. Coke grinder. 4,239,161, Cl. 241-46.020.

Walz, John C.: *See*—
Eisenberg, Bernard C.; and Walz, John C., 4,239,116, Cl. 209-523.000.

Wang, Chia G. Detection of atoms using monochromatic X-rays. 4,239,966, Cl. 250-275.000.

Wang, James C.: *See*—
Knott, Jack E., II; and Wang, James C., 4,239,826, Cl. 428-35.000.

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Warywoda, Joseph: *See*—
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Washida, Hiroshi: *See*—
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Gurusiddaiah, Sarangamat; Ronald, Robert C.; Magnuson, James A.; and McFadden, Bruce A., 4,239,690, Cl. 260-340.200.

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Sparks, Robert E.; Wahab, Mariam M.; and Mason, Norbert S., 4,239,714, Cl. 264-45.500.

Watabe, Susumu: *See*—
Uchiyama, Hiromichi; Yaguchi, Eiichi; Nakamura, Akira; Maeda, Yoshio; and Watabe, Susumu, 4,239,094, Cl. 191-25.000.

Watanabe, Atsuo: *See*—
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Watanabe, Hironori, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,238,984, Cl. 84-1.010.

Watanabe, Sakuji: *See*—
Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, 4,239,358, Cl. 354-60.00E.

Watanuma, Yoshinori: *See*—
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Waterloo Industries, Inc.: *See*—
Oltman, John P.; and Purkapile, Emerson V., 4,239,195, Cl. 269-16.000.

Waters, William A. Self-contained air conditioning unit for persons. 4,238,857, Cl. 2-171.300.

Weaver, Lelland A.: *See*—
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Webb, Shirley B.: *See*—
ten Haken, Pieter; and Webb, Shirley B., 4,239,889, Cl. 544-335.000.

Weber, Erich: *See*—
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Wedam, Werner F., to RCA Corporation. Horizontal deflection and power supply circuit with a start-up arrangement. 4,240,013, Cl. 315-411.000.

Weglarska-Zagorna, Henryka: *See*—
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Wegmann, Helmut: *See*—
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Weidenmuller, Jurgen: *See*—
Enke, Peter; Schlickmann, Helmut; Kneuper, Wolfgang; Frohberg, Ekkehard; Mink, Arno; and Weidenmuller, Jurgen, 4,239,110, Cl. 206-396.000.

Weighton, David M.: *See*—
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Weigl, Erwin: *See*—
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Weikel, Donald J., Jr., to Xerox Corporation. Full wave rectification apparatus for operation of DC corotrons. 4,239,373, Cl. 355-14.0CH.

Weiler, Gerhard H.; and Komendowski, Henry, to Automatic Liquid Packaging, Inc. Method for forming, filling and sealing a container having plural closures. 4,239,726, Cl. 264-525.000.

Weinberg, Alan S.; and Gillio-Tos, Mario, to W. R. Grace & Co. Blends of butyl rubber and polymers of vinylidene chloride. 4,239,799, Cl. 428-335.000.

Weinschel Engineering Co., Inc.: *See*—
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Weiss, Donald J.; and Speckhart, Bernard S., to White Machine Company, Inc. Apparatus and method for assemblying randomly arranged articles. 4,239,435, Cl. 414-136.000.

Weiss, Martin J.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,899, Cl. 556-438.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,900, Cl. 556-438.000.

Weiss, Peter, to Jagenberg Werke Aktiengesellschaft. Unwinding stand for a plurality of rolls of material. 4,239,165, Cl. 242-58.600.

Weitz, Hans-Martin; Platz, Rolf; and Hartig, Juergen, to BASF Aktiengesellschaft. Manufacture of butenediol diesters. 4,239,910, Cl. 560-244.000.

Weitz, Hans-Martin; and Hartig, Juergen, to BASF Aktiengesellschaft. Manufacture of glycol esters. 4,239,911, Cl. 560-246.000.

Weitz, Hans-Martin: *See*—
Fischer, Rolf; and Weitz, Hans-Martin, 4,239,706, Cl. 568-484.000.

Wellendorf, Klaus; and Sommer, Ruediger, to Dr. Ing. Rudolf Hell GmbH. Apparatus for electro-optically recording pictorial information for a facsimile transmission system. 4,240,117, Cl. 358-296.000.

Wellendorf, Klaus; and Sommer, Ruediger, to Dr. Ing. Rudolf Hell GmbH. Method for electro-optically sensing, transmitting pictorial information. 4,240,118, Cl. 358-296.000.

Wempe, Richard J.: *See*—
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Wenzel, Franz: *See*—
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Werner, Peter: *See*—
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Fanning, William J.; and Masopust, Otto T., Jr., 4,240,127, Cl. 361-304.000.
Johnson, Everett C.; and Naylor, Arthur G., 4,240,032, Cl. 324-158.00F.
Rapp, Willard E., 4,238,877, Cl. 29-402.110.
Rysewyk, Ambrose L., 4,239,443, Cl. 414-618.000.
Winings, Richard H., 4,239,567, Cl. 156-154.000.

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Coleman, Robert L., 4,240,004, Cl. 310-327.000.
Dixon, George D.; and Croop, Edward J., 4,239,077, Cl. 156-272.000.
Feldman, Donald W.; Weaver, Lelland A.; and Liu, Chi-Sheng, 4,239,995, Cl. 307-426.000.
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Johnston, Robert J.; Colista, Dominic; Layciak, Stephen G.; and Dobrosielski, Stephen S., 4,239,946, Cl. 200-51.130.
Nelson, Hugh A.; Wafer, John A.; Koren, Paul P.; Salemi, Nicholas A.; and Maier, Alfred E., 4,240,053, Cl. 335-16.000.
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Wolf, Joachim E.; and Locke, Philip F., Jr., 4,240,059, Cl. 338-49.000.

Westmoreland, Mark. Machine for making wood stakes. 4,238,983, Cl. 83-408.000.

Westrom, Arthur C., to Kearney-National Inc. Surge arrester having coaxial shunt gap. 4,240,124, Cl. 361-127.000.

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Whirlpool Corporation: *See*—
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White Machine Company, Inc.: *See*—
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White, Thomas H., to Boeing Company, The. Pilot seat. 4,239,282, Cl. 297-284.000.

Wickman, Bobbie L., to Midnight Rollers Inc. Roller skate light assembly. 4,240,132, Cl. 362-103.000.

Wiegand Karlsruhe GmbH: *See*—
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Wiezer, Hartmut; Pfahler, Gerhard; and Mayer, Norbert, to Hoechst Aktiengesellschaft. Substituted piperidine hydroxamides, their preparation, and their use as light stabilizers. 4,239,891, Cl. 546-242.000.

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Wild, Peter; and Nickel, Horst, to Bayer Aktiengesellschaft. Salts of N-acylaminohydroxynaphthalenesulphonic acids. 4,239,886, Cl. 544-170.000.

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Wildenaur, Anton. Warehousing apparatus for moving goods. 4,239,436, Cl. 414-276.000.

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Wilkerson, C. William. Process of producing a weighted exercising device. 4,239,211, Cl. 272-119.000.

Wilkinson, Samuel C. W., to Crane Packing Limited. Rotary mechanical face seals. 4,239,240, Cl. 277-84.000.

Wilkinson, Walter J.; and Serlin, Irving, to Monsanto Company. Coating compositions comprising polymer blends. 4,239,676, Cl. 260-39.00P.

William M. Bailey Company: *See*—
Skendrovic, Lawrence, 4,239,291, Cl. 299-70.000.

Williams, John L.; and Brown, Asa V., Jr., to Mead Corporation, The. Automatic forward-feed shelf. 4,239,099, Cl. 193-32.000.

Williams, Joseph B., to General Electric Company. Flame retardant thermoplastic compositions. 4,239,678, Cl. 260-42.180.

Williams, Robert E.; Decker, Thomas A.; Kurtzman, Charles; and Kuether, Christian L., to Baylor College of Medicine. Apparatus for generating and displaying visual acuity targets. 4,239,351, Cl. 351-36.000.

Williams, Steven E.; and Kunz, Bernard L., to Emerson Electric Co. Electrically operated valve with balanced port design. 4,239,177, Cl. 251-11.000.

Williams, Thomas A.; and Mather, Douglas E., to Albright & Wilson Ltd. Manufacture of detergents. 4,239,640, Cl. 252-95.000.

Williams, Walter G., to Goodyear Tire & Rubber Company, The. Tire mold press operating method. 4,239,723, Cl. 264-315.000.

Williamson, Charles H. Bracket for attaching rails to steel fence posts. 4,239,414, Cl. 403-387.000.

Williamson, James, to Raytheon Company. Starting circuit for automatic frequency control arrangement. 4,240,076, Cl. 343-7.0PL.

Willis, Donald H., to RCA Corporation. Regulated deflection circuit. 4,240,012, Cl. 315-408.000.

Wilson, Jeffrey D.: *See*—
Youssefyeh, Raymond D.; and Wilson, Jeffrey D., 4,239,887, Cl. 544-184.000.

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Wilson, Joseph F.; Fodor, Lawrence M.; and Kenton, Joseph R., to Phillips Petroleum Company. Fertilizer solutions containing sulfur and having low crystallization temperature. 4,239,522, Cl. 71-29.000.

Wilson, Michael C. Novelty game drinking glass. 4,239,223, Cl. 273-138.00R.

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Winters, Luther R., Jr.: *See*—
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Wintner, Paul. Compression molding procedure for liquid polyester resins. 4,239,717, Cl. 264-108.000.

Wirth, John C. J. Method for preserving the grinding characteristics of a grinding tool. 4,239,501, Cl. 51-281.00R.

Wirz, Armin: *See*—
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Wisskirchen, Klaus B.: *See*—
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Wludyka, Joseph. Handle brace. 4,239,413, Cl. 403-263.000.

Wolf, Joachim E.; and Locke, Philip F., Jr., to Westinghouse Electric Corp. Current divider for a current sensing transducer. 4,240,059, Cl. 338-49.000.

Wolf, Raymond A., to Teledyne Industries, Inc. Vacuum gauge. 4,238,964, Cl. 73-714.000.

Wollermann, Louis A.; Rucker, Dugan A.; and Krum, Jack K., to International Telephone and Telegraph Corporation. Reduction of mixing time of yeast leavened dough compositions. 4,239,783, Cl. 426-25.000.

Woo, Edmund P., to Dow Chemical Company, The. Bis-dicyanoalkyl arene compounds. 4,239,694, Cl. 260-465.00D.

Woodward, Oakley M., to United States of America, Army. Short backfire antenna with sum and error patterns. 4,240,080, Cl. 343-817.000.

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Wrench, Edwin H., to General Dynamics Corporation. Actuator configuration for a deformable mirror. 4,239,343, Cl. 350-295.000.

Wu, Edward W. J. Method and equipment for manufacture of target boards for darts or archery. 4,239,573, Cl. 156-245.000.

Wyller, Arne A. Print maker. 4,239,376, Cl. 355-27.000.

X Incorporated: *See*—
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Xerox Corporation: *See*—
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Yaindl, Charles, to Worthington Pump, Inc. Reciprocating plunger pump with improved liquid end valve assembly. 4,239,463, Cl. 417-454.000.

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Yamanaka, Hideo: *See*—
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Yamazaki, Shunpei. Semiconductor photoelectric conversion device. 4,239,554, Cl. 136-255.000.

Yanagioka, Hiroshi; Futami, Atsushi; Shinsenji, Masatake; and Tanaka, Minoru, to Chiyoda Chemical Engineering & Construction Co., Ltd. Gas-liquid contact reaction apparatus. 4,239,515, Cl. 55-223.000.

Yang, Kang, to Conoco, Inc. Barium oxide catalyzed ethoxylation. 4,239,917, Cl. 568-618.000.

Yano, Tsuneomi; and Yuzawa, Haruo, to Nissan Motor Company, Limited. Closed loop controlled auxiliary air delivery system for internal combustion engine. 4,240,145, Cl. 364-431.000.

Yasuda, Yoshinobu: *See*—
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Yaworsky, Chester E.: *See*—
Howard, Curtiss G.; Jordan, Lester W.; and Yaworsky, Chester E., 4,239,954, Cl. 219-121.0EH.

Yeager, Robert R., to Lambert Corporation. Lifting mechanism with cam. 4,239,086, Cl. 172-680.000.

Yeakey, Ernest L.: *See*—
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Yoshida, Hajime, to Hajime Industries, Ltd. Apparatus and method for pattern information processing. 4,240,107, Cl. 358-93.000.

Yoshida Kogyo K.K.: *See*—
Akashi, Shunji, 4,238,872, Cl. 24-205.11F.
Takahashi, Kihei, 4,238,880, Cl. 29-766.000.
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Yoshida, Yoshio; and Tanizaki, Takeshi. Tile setting assembly, tile wall and method for building a tile wall. 4,238,915, Cl. 52-510.000.

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Young, James E.: *See*—
Van Horne, Arthur C.; and Young, James E., 4,239,405, Cl. 400-616.100.

Young, Peter L.: *See*—
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Youssefyeh, Raymond D.; and Wilson, Jeffrey D., to USV Pharmaceutical Corporation. Pyridothienotriazines. 4,239,887, Cl. 544-184.000.

Yu, James H., to Mead Corporation, The. Momentumless shutdown of a jet drop recorder. 4,240,082, Cl. 346-75.000.

Yuzawa, Haruo: *See*—
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Zador, Eugene: *See*—
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Zerner, Donald T.: *See*—
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Zhilin, Viktor A. System for locating mobile objects in distress. 4,240,079, Cl. 343-100.0ST.

Zima, Herbert; and Dworak, Gert, to Vianova Kunstharz, A.G. Aqueous coating emulsions and process for producing same. 4,239,672, Cl. 260-29.70H.

Zimmerman, Edwin H. Automatic cant production machine. 4,239,069, Cl. 144-39.000.

Zimmerman, Robert L., to Texaco Development Corp. Polyurethane catalysts and method of use. 4,239,855, Cl. 521-115.000.

Zimmerman, Robert L.; McEntire, Edward E.; and Klein, Howard P., to Texaco Development Corp. Isocyanurate foam catalyst. 4,239,916, Cl. 562-574.000.

Zoller-Kipper GmbH: *See*—
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Zory, Peter S.; Scholl, Frederick W.; and Lockwood, Harry F., to Exxon Research & Engineering Co. Semiconductor optoelectronic device package. 4,240,098, Cl. 357-74.000.

Zumsteg, Fredrick C., to Du Pont de Nemours, E. I., and Company. Nonlinear optical device. 4,240,048, Cl. 332-7.510.

Zurlinden, Cyril P., III; Howe, Charles W.; and Podry, John M. Laminated inductor stacking and calibrating apparatus. 4,238,879, Cl. 29-705.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF DECEMBER, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Chimura, Hideo: *See*—
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.

DiNatale, Robert F. Photographic printing method. Re. 30,449, Cl. 355-77.000.

E-Z-Em Company, Inc.: *See*—
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Fujii, Akio: *See*—
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Greene, Franklin M.: *See*—
Meyers, Phillip H.; and Greene, Franklin M., Re. 30,446, Cl. 128-736.000.

Hoffmann-La Roche Inc.: *See*—
Mohacsi, Ernest, Re. 30,452, Cl. 546-74.000.

Honeywell Inc.: *See*—
Shroff, Bansi K., Re. 30,448, Cl. 242-192.000.

Huck Manufacturing Company: *See*—
Ruhl, John H., Re. 30,445, Cl. 85-7.000.

Iannicelli, Joseph, to J. M. Huber Corporation. Surface modified pigments. Re. 30,450, Cl. 106-308.00N.

J. L. Clark Manufacturing Co.: *See*—
Loyd, Patrick V.; and Mills, Samuel M., Re. 30,447, Cl. 138-141.000.

J. M. Huber Corporation: *See*—
Iannicelli, Joseph, Re. 30,450, Cl. 106-308.00N.

Loyd, Patrick V.; and Mills, Samuel M., to J. L. Clark Manufacturing Co. Insulating connector. Re. 30,447, Cl. 138-141.000.

Maeda, Kenji: *See*—
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.

Meyers, Phillip H.; and Greene, Franklin M., to E-Z-Em Company, Inc. Apparatus for detecting temperature variations over selected regions of living tissue, and method thereof. Re. 30,446, Cl. 128-736.000.

Mills, Samuel M.: *See*—
Loyd, Patrick V.; and Mills, Samuel M., Re. 30,447, Cl. 138-141.000.

Mohacsi, Ernest, to Hoffmann-La Roche Inc. 3-Phenoxymorphinans and derivatives thereof. Re. 30,452, Cl. 546-74.000.

Nakayama, Yuya: *See*—
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.

Ruhl, John H., to Huck Manufacturing Company. Fastener with proportioned strength lock grooves. Re. 30,445, Cl. 85-7.000.

Shimada, Nobuyoshi: *See*—
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.

Shroff, Bansi K., to Honeywell Inc. Tape recorder system. Re. 30,448, Cl. 242-192.000.

Takita, Tomohisa: *See*—
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.

Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, to Zaidan Jojin Biseibutsu Kagaku Kenkyu Kai. Novel process for producing antibiotics bleomycin. Re. 30,451, Cl. 260-112.50R.

Zaidan Jojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.

LIST OF DESIGN PATENTEES

AB Akerlund & Rausing: *See*—
Andersson, Rolf U., 257,627, Cl. D9-433.000.

Andersson, Rolf U., to AB Akerlund & Rausing. Packaging tray. 257,627, 12-16-80, Cl. D9-433.000.

Armbruster, Joseph M., to Sheller-Globe Corporation. Vehicle roof mounted air conditioner cowling. 257,637, 12-16-80, Cl. D23-142.000.

Barger, Richard L., to Scope Manufacturing Company. Log splitter. 257,632, 12-16-80, Cl. D15-127.000.

Bue, Richard C.; and Luckes, Earl L., to Sico Incorporated. Mobile bed frame. 257,623, 12-16-80, Cl. D6-79.000.

Carreiro, Ronald. Toy sword. 257,635, 12-16-80, Cl. D21-109.000.

Consolidated Devices, Inc.: *See*—
Grabovac, Bosko, 257,626, Cl. D8-24.000.

Dent, David H. Fireplace grate. 257,625, 12-16-80, Cl. D7-207.000.

Dinn, Jerome R.: *See*—
Reid, Kenneth G.; and Dinn, Jerome R., 257,639, Cl. D25-78.000.

Dunham, Leslie N. Automobile. 257,630, 12-16-80, Cl. D12-92.000.

Eskelsen, Dawn V. Slipper. 257,622, 12-16-80, Cl. D2-266.000.

Garcia, John M. Skill toy. 257,633, 12-16-80, Cl. D21-62.000.

Gecchelin, Bruno, to Skipper S.p.A. Lamp shade. 257,644, 12-16-80, Cl. D26-118.000.

Grabovac, Bosko, to Consolidated Devices, Inc. Torque wrench lever. 257,626, 12-16-80, Cl. D8-24.000.

Hibdon, Robert M.: *See*—
Miller, Gary L.; and Hibdon, Robert M., 257,634, Cl. D21-88.000.

Hughey, Albert L.; and Hughey, Paul B., to Vantage Construction Company Incorporated. Temperature insulating foam panel. 257,640, 12-16-80, Cl. D25-96.000.

Hughey, Paul B.: *See*—
Hughey, Albert L.; and Hughey, Paul B., 257,640, Cl. D25-96.000.

Keller, Ethel. Cookie cutter. 257,624, 12-16-80, Cl. D7-44.000.

LeCornu, Allen R. Adhesive push-button telephone attachment. 257,631, 12-16-80, Cl. D14-66.000.

Levin, Gary M. Railroad restaurant. 257,638, 12-16-80, Cl. D25-11.000.

Luckes, Earl L.: *See*—
Bue, Richard C.; and Luckes, Earl L., 257,623, Cl. D6-79.000.

Miller, Gary L.; and Hibdon, Robert M. Aerial toy. 257,634, 12-16-80, Cl. D21-88.000.

Miller, Harvey R. Convertible airplane and automobile. 257,629, 12-16-80, Cl. D12-4.000.

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Reid, Kenneth G.; and Dinn, Jerome R., 257,639, Cl. D25-78.000.

Plante, Emile. Spindle for a lobster trap buoy. 257,628, 12-16-80, Cl. D10-121.000.

Reid, Kenneth G.; and Dinn, Jerome R., to Pacific Steel Ltd. Post for storage racking. 257,639, 12-16-80, Cl. D25-78.000.

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Scope Manufacturing Company: *See*—
Barger, Richard L., 257,632, Cl. D15-127.000.

Sheller-Globe Corporation: *See*—
Armbruster, Joseph M., 257,637, Cl. D23-142.000.

Sico Incorporated: *See*—
Bue, Richard C.; and Luckes, Earl L., 257,623, Cl. D6-79.000.

Skipper S.p.A.: *See*—
Gecchelin, Bruno, 257,644, Cl. D26-118.000.

Taylor, Stephen P. Candle. 257,641, 12-16-80, Cl. D26-6.000.

Taylor, Stephen P. Candle. 257,642, 12-16-80, Cl. D26-6.000.

Vantage Construction Company Incorporated: *See*—
Hughey, Albert L.; and Hughey, Paul B., 257,640, Cl. D25-96.000.

Viio, Matti. Workman's jacket. 257,621, 12-16-80, Cl. D2-187.000.

Williams, William O., Jr. Artificial fishing lure. 257,636, 12-16-80, Cl. D22-27.000.

Zurcher, Frederic. Luminaire. 257,643, 12-16-80, Cl. D26-85.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF DECEMBER, 1919

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 16, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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4 :	4,238,986	4,239,188	4,240,024	4,239,127	4,239,320	4,239,440
	4,239,486	4,239,209	4,240,029	4,239,131	4,239,380	4,239,783
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	4,239,044	4,239,849	10 : 4,239,387	4,239,249	4,239,939	4,239,354
	4,239,055	4,239,884	4,239,553	4,239,252	4,240,012	4,239,365
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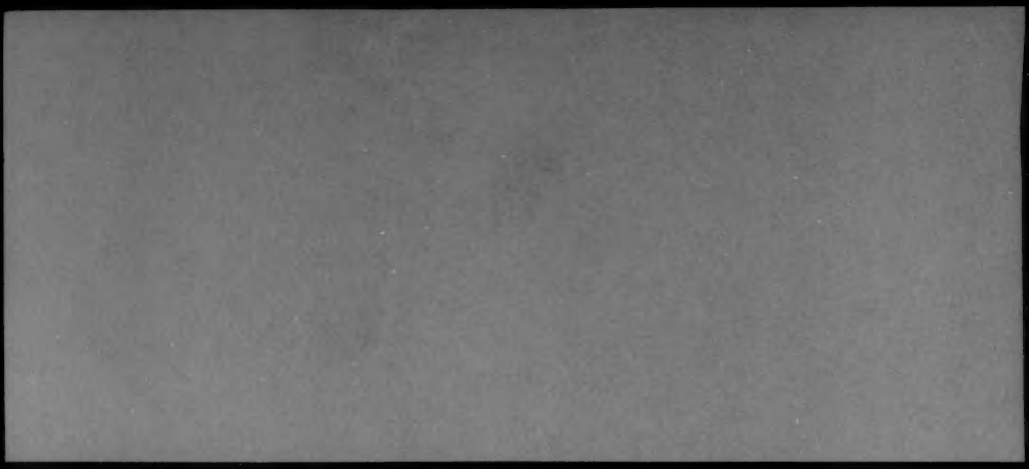

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